

THE NEWSLETTER OF THE MATHEMATICAL ASSOCIATION OF AMERICA

FOCUS

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On the cover: Centennial Olympic Park, Atlanta

Photographs of Atlanta courtesy of the Atlanta Convention and Visitors Bureau

Joint MAA-AMS Invited Addresses and Joint Sessions

JOINT INVITED ADDRESSES

PROCESSING IMAGES USING NONLINEAR PDES (MAA-AMS)

Andrea L. Bertozzi
University of California, Los Angeles
Wednesday, 11:10 a.m.



ALGEBRAIC STATISTICS (MAA-AMS)

Bernd Sturmfels
University of California, Berkeley
Friday, 11:10 a.m.



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

Friday, 5:00 p.m.
Speaker and title to be announced.

JOINT SPECIAL SESSIONS

TROPICAL GEOMETRY

Michael Develin and Bernd Sturmfels, University of California, Berkeley. (MAA-AMS)
Thursday morning and afternoon

HISTORY OF MATHEMATICS

Joseph W. Dauben, Lehman College (CUNY), Patti Hunter, Wetmont College, and Karen H. Parshall, University of Virginia; (MAA-AMS)
Friday afternoon and Saturday morning and afternoon

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, Thursday and Saturday mornings and Wednesday afternoon

RESEARCH IN MATHEMATICS BY UNDERGRADUATES

Darren A. Narayan, Carl V. Lutzer, Tamara A. Burton, Rochester Institute of Technology; and Michael J. Fisher, California State University (MAA-AMS-SIAM)
Friday afternoon and Saturday morning and afternoon

OTHER JOINT SESSIONS

PRIZE SESSION AND RECEPTION

Thursday, 4:25 p.m.

Prize Session and Reception: In order to showcase the achievements of the recipients of various prizes, the MAA and AMS are co-sponsoring this event at 4:25 p.m. on Thursday. 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 will award the Chauvenet Prize, Certificates of Meritorious Service, the Deborah and Franklin Tepper Haimo Awards for Distinguished College or University Teaching of Mathematics, JPBM Communications Award, and the Yueh-Gin Gung and Dr. Charles Y. Hu Award for Distinguished Service to Mathematics. The AMS will announce the winners of the AMS Book Prize, Bôcher Memorial Prize, Levi L. Conant Prize, Frank Nelson Cole Prize in Number Theory, Ruth Lyttle Satter Prize in Mathematics, Albert Leon Whitman Memorial Prize, 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. This session will also be the venue to announce the winner of the Leonard M. and Eleanor B. Blumenthal Award for the Advancement of Research in Pure Mathematics.



The Georgia Dome

88th Annual Meeting of the MAA

MAA invited ADDRESSES

SQUARE ICE IS VERY NICE, BUT CAN YOU PUT A MATCH TO IT?

Georgia Benkart
University of Wisconsin
Saturday, 9:00 a.m.



ORIGAMI, LINKAGES, AND POLYHEDRA: FOLDING WITH ALGORITHMS

Erik D. Demaine, Massachusetts Institute of Technology
Thursday, 10:05 a.m.

WHAT ARE P-ADIC NUMBERS AND WHAT ARE THEY FOR?

Fernando Gouvêa, Colby College
Wednesday, 2:15 p.m.



SYMMETRY IN COMPLEX ANALYSIS

Steven G. Krantz, Washington University
Saturday, 10:05 a.m.

GIVEN FOUR LINES IN SPACE, HOW MANY OTHER LINES MEET ALL FOUR?: THE GEOMETRY, TOPOLOGY, AND COMBINATORICS BEHIND LINEAR ALGEBRA

Ravi Vakil, Stanford University
Wednesday, 3:20 p.m.



VICTORIAN COMBINATORICS (STUDENT LECTURE)

Robin Wilson, The Open University
Friday, 1:00 p.m.

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.



Aparna Higgins



Deborah Hughes-Hallett



Gerald Alexanderson

MAA invited PAPER SESSIONS

MODELING PROBLEMS OF THE ENVIRONMENT

Organized by Ben Fusaro, Florida State University

Friday, 1:00 p.m. - 3:00 pm

The speakers are Sherry Brandt-Williams, Atlantic Ecology Division of the EPA, Using energy systems language to diagram and stimulate a complex biological model; Daniel E. Campbell, Atlantic Ecology Division of the EPA, Stability and renewal in heavily exploited populations; Lothar S. Dohse, UNC-Asheville, A cooperative modeling initiative between industry and academia, and Donald E. Miller, Saint Mary's College, Modeling the spread and control of oil spills.

SYMMETRY IN ANALYSIS

Organized by Steve Krantz

Washington University in St. Louis

Saturday, 1:00 p.m. - 3:00 p.m.

Speakers are Robert E. Greene, UCLA; Kang-Tae Kim, Pohang University of Science and Technology (Korea); Jeffery McNeal, Ohio State University; and Harold Parks, Oregon State University.

**WORLDS OF INTERACTIVE MATHEMATICS,
PART I: THE LEGACY OF ELIAS DEEBA**

Organized by Ananda Gunawardena, Carnegie Mellon University; Dan Kalman, American University; and Gerald J. Porter, University of Pennsylvania

Saturday, 9:00 a.m.–10:55 a.m

PART II: THE LEGACY OF JAMES E. WHITE

Saturday, 3:15 p.m.–5:10 p.m.

One of the initial authoring environments for the creation of interactive texts was the Mathkit language developed by Jim White. White's work led to the creation of the MAA's Interactive Mathematical Text Project (IMTP), funded by IBM and the NSF. White not only provided much of the intellectual material for this project but he also, through this project and the

subsequent Project Welcome, provided hands-on training in the use of the tools. Elias Deeba was both a participant in these endeavors and the director of the IMTP at the University of Houston, Downtown. We take this opportunity to honor them for their leadership and to continue the work that they have begun. In these sessions we will highlight some of their contributions, as well as showcasing recent developments in the field which bear the stamp of their influence. Speakers include Ananda Gunawardena, Elias Deeba's work; Zuhair Nashed, University of Central Florida, Some *paradigms in* elementary linear algebra which Elias liked; Dan Kalman and Gerald J. Porter, James White's work; Samad Mortabit, Metropolitan State University, Mathwright activities; and Margie A. Hale, Stetson University, Interactive investigation of geometry through light rays.

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

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: Wednesday, 9:00 a.m. – 11:00 a.m.

Part B: Friday, 9:00 a.m. – 11:00 a.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 stress the development of visualization skills to acquire strong geometric intuition. The materials, taken as a whole, provide everything needed to teach a comprehensive first course in linear algebra. Versions of the materials have been developed for use with Maple and Mathematica. Participants will have the option of working with the materials on either of these platforms. Cost is \$95; enrollment limit is 30.

MINICOURSE #2

TEACHING A GALOIS THEORY FOR UNDERGRADUATES

Organized by John R. Swallow, Davidson College

Part A: Wednesday, 2:15 p.m. – 4:15 p.m.

Part B: Friday, 1:00 p.m. – 3:00 p.m.

Participants explore Galois theory from an undergraduate perspective, gaining materials and technological tools for use teaching an undergraduate course. The course outlines the theory from a concrete, computational point of view, assuming only one semester of abstract algebra. The course also introduces AlgFields: a package for use with Maple or Mathematica, facilitating computation in number fields. Participants study examples, solve exercises, and pose new problems, all built around the concept of an algebraic number with complex approximation. Only basic facility with one of the symbolic computation systems is necessary. Handouts and web links to the freely available package will be distributed. Cost is \$95; enrollment limit is 30.

MINICOURSE #3

CREATING INTERACTIVE WORKBOOKS USING MS EXCEL

Organized by Sarah L. Mabrouk, Framingham State College

Part A: Wednesday, 4:30 p.m. – 6:30 p.m.

Part B: Friday, 3:15 p.m. – 5:15 p.m.

Using the control toolbox, one can create interactive workbooks containing scroll bars, buttons, and graphs that can be used for course demonstrations and for course assignments/projects as well as workbooks that allow students to explore concepts. Creating interactive workbooks using MS Excel requires only basic knowledge of graph and data creation, and students need only MS Excel to use these workbooks; no specialized knowledge is needed to create them and the Internet is not required in order to use them. Participants will create interactive workbooks containing graph and data components. Sample topics include analysis of spring-mass system and numerical integration. Cost is \$95; 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. – 10:00 a.m.

Part B: Saturday, 9:00 a.m. – 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 \$95; enrollment limit is 30.

MINICOURSE #5

HANDS-ON DISCRETE MATHEMATICS WITH TECHNOLOGY

Organized by Douglas E. Ensley, Shippensburg University, and Katherine G. McGivney, Shippensburg University

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

Part B: Saturday, 1:00 p.m. – 3:00 p.m.

Discrete math is a course that primarily serves students studying math and computer science. This minicourse will focus on three major areas of discrete math (sets/relations/graphs, combinatorics/probability, and writing mathematical proofs) that are common to most discrete math courses, and how computer technology can be used to make these courses more student centered. We will use Maple for the first day and pre-designed Flash movies for the second day, and in each case we will spend some time on special features of the software and some time on design issues for effective classroom use. The minicourse participants will come away with new ideas and customized material for their own discrete math courses. Some familiarity with Maple syntax is expected, but no experience with Flash will be assumed. Cost is \$95; enrollment limit is 30.

MINICOURSE #6

WEBWORK, AN INTERNET-BASED SYSTEM FOR GENERATING AND DELIVERING HOMEWORK PROBLEMS TO STUDENTS

Organized by Arnold K. Pizer, Michael E. Gage, and Vicki Roth, University of Rochester

Part A: Thursday, 1:00 p.m. – 3:00 p.m.

Part B: Saturday, 3:15 p.m. – 5:15 p.m.

This minicourse introduces participants to WeBWorK, a freely available system for checking and grading homework problems. WeBWorK won the 1999 ICTCM Award for Excellence and Innovation with the Use of Technology in Collegiate Mathematics. Supported by grants from NSF, WeBWorK has already been adopted by a large number of colleges and universities. WeBWorK can handle most homework problems found in a typical calculus text and is distributed with an extensive library of over 4000 problems covering college algebra and trigonometry, pre-calculus, single and multivariable calculus, differential equations, linear algebra, statistics, and probability. There is also a larger national library of problems. It's easy to modify current WeBWorK problems or to write new ones. Participants will actively participate in using WeBWorK and writing WeBWorK problems. Readers can learn more about WeBWorK by connecting to <http://www.math.rochester.edu/webwork>. Cost is \$95; enrollment limit is 30.

MINICOURSE #7

DEVELOPING YOUR DEPARTMENT'S ASSESSMENT PLAN

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

Part A: Wednesday, 9:00 a.m. – 11:00 a.m.

Part B: Friday, 9:00 a.m. – 11:00 a.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 50.

MINICOURSE #8

MATHEMATICAL FINANCE

Organized by Walter R. Stromquist, Bryn Mawr College

Part A: Wednesday, 2:15 p.m. – 4:15 p.m.

Part B: Friday, 1:00 p.m. – 3:00 p.m.

We will begin by introducing the "standard model" for stock prices, Geometric Brownian Motion, and we will examine market price statistics to test the validity of this model. We will then cover two main ideas of modern finance: portfolio

optimization and option valuation. Portfolio optimization means allocating a fixed investment fund among various risky assets; we will see how this is turned into a quadratic programming problem, and how it leads to the Capital Asset Pricing Model. Option valuation includes the well-known Black-Scholes formula, which we will cover thoroughly. The presenter will draw on practical examples from his consulting work and from his financial mathematics class at Bryn Mawr College. Cost is \$60; enrollment limit is 50.

MINICOURSE #9

INFUSING CONNECTIONS INTO CORE COURSES FOR FUTURE SECONDARY TEACHERS

Organized by Steve R. Benson and Al Cuoco, Education Development Center; Karen J. Graham, University of New Hampshire; and Neil Portnoy, Stony Brook University

Part A: Wednesday, 4:30 p.m. – 6:30 p.m.

Part B: Friday, 3:15 p.m. – 5:15 p.m.

National recommendations call for content courses for prospective teachers that make explicit connections between the mathematics that teachers learn and the mathematics they will use as teachers. Most content courses for preservice secondary teachers are core courses for the mathematics major and texts for these courses do not typically address these connections. Minicourse participants will work with materials that contain the mathematical rigor of an upper division course and help prospective teachers build connections to secondary mathematics, discuss implementation issues with colleagues who have used such materials, and begin to adapt these materials for the courses they teach. Cost is \$60; enrollment limit is 50.

MINICOURSE #10

BRIDGING THE GAP BETWEEN MATHEMATICS AND THE PHYSICAL SCIENCES

Organized by Tevian Dray, Oregon State University

Part A: Thursday, 9:00 a.m. – 11:00 a.m.

Part B: Saturday, 9:00 a.m. – 11:00 a.m.

There is a surprisingly large gap between the way mathematicians on the one hand, and physical scientists and engineers on the other, do mathematics. The key to bridging this gap between mathematics and the physical sciences is geometric reasoning. This minicourse will introduce participants to the art of teaching geometric reasoning, emphasizing, but not limited to, vectors and vector calculus. Participants will use and discuss open-ended group activities intended to foster geometric reasoning, which have been developed as part of the NSF-funded Vector Calculus Bridge Project at Oregon State University. These materials have been used successfully by several instructors at a variety of institutions. More information on this project is available online at <http://www.math.oregonstate.edu/bridge>. Cost is \$60; enrollment limit is 40.

MAA mini COURSES

MINICOURSE #11

FAIR ENOUGH? MATHEMATICS OF EQUITY

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

Part A: Thursday, 1:00 p.m. – 3:00 p.m.

Part B: Saturday, 1:00 p.m. – 3:00 p.m.

Topics of fairness make terrific subject matter for contemporary mathematics courses. 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 50.

MINICOURSE #12

GETTING STUDENTS INVOLVED IN UNDERGRADUATE RESEARCH

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

Part A: Wednesday, 9:00 a.m. – 11:00 a.m.

Part B: Friday, 9:00 a.m. – 11:00 a.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 50.

MINICOURSE #13

ORIGAMI IN UNDERGRADUATE MATHEMATICS COURSES

Organized by Thomas C. Hull, Merrimack College

Part A: Wednesday, 2:15 p.m. – 4:15 p.m.

Part B: Saturday, 1:00 p.m. – 3:00 p.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 lurks behind these creases, from geometry, combinatorics, and algebra. 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 paper folding or in teaching geometry, algebra, or combinatorics would be useful. Cost is \$70; enrollment limit is 30.

MINICOURSE #14

EULER

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

Part A: Wednesday, 4:30 p.m. – 6:30 p.m.

Part B: Friday, 3:15 p.m. – 5:15 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 50.

MINICOURSE #15

CONCEPTTESTS AND PEER INSTRUCTION: ACTIVE LEARNING IN THE CALCULUS CLASSROOM

Organized by Deborah Hughes Hallett, and David O. Lomen, University of Arizona; and Maria Robinson, Seattle University

Part A: Thursday, 9:00 a.m. – 11:00 a.m.

Part B: Saturday, 9:00 a.m. – 11:00 a.m.

ConcepTests and Peer Instruction—powerful tools for improving student learning—were originally developed by Eric Mazur at Harvard to teach introductory physics, and are now used in biology and astronomy. ConcepTests have now been written for calculus, where they have shown the same impressive results as in the sciences. Starting with an overview of the use and effectiveness of ConcepTests, this workshop will give participants hands-on experience with their use in mathematics classrooms. Cost is \$60; enrollment limit is 50.

MINICOURSE #16

MUSIC AND MATHEMATICS

Organized by Leon Harkleroad, Wilton, ME

Part A: Thursday, 1:00 p.m. – 3:00 p.m.

Part B: Friday, 1:00 p.m. – 3:00 p.m.

Over the years people have used mathematics in various ways to describe, analyze, and create music. This minicourse will explore the applications of mathematical areas such as number theory, probability, and group theory to musical topics like tuning systems, bell-ringing, and twentieth-century compositional technique. Emphasis will be placed on how minicourse participants can incorporate this material into their classes, or even design a service course on music and mathematics. Cost is \$60; enrollment limit is 50.

MAA Contributed Paper SESSIONS

See the complete descriptions and instructions on how to participate in these sessions, beginning on page 16 in the May/June issue of FOCUS or at http://www.ams.org/amsmtgs/2091_maacp.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.

GETTING STUDENTS TO DISCUSS AND TO WRITE ABOUT MATHEMATICS

Sarah L. Mabrouk, Framingham State College
Wednesday morning and Thursday afternoon

MY FAVORITE DEMO—INNOVATIVE STRATEGIES FOR MATHEMATICS INSTRUCTORS

David R. Hill, Temple University
Lila F. Roberts, Georgia College and State University
Wednesday morning and Thursday afternoon

COURSES BELOW CALCULUS: A NEW FOCUS

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

MATHEMATICS AND SPORTS

Doug Drinen, University of the South
Sean L. Forman, St. Joseph's University
Howard Penn, US Naval Academy
Wednesday morning and Friday afternoon

MATHEMATICS IN THE ISLAMIC WORLD

Glen Van Brummelen, Bennington College
Victor L. Katz, University of the District of Columbia
Wednesday afternoon

MATHLETS FOR TEACHING AND LEARNING MATHEMATICS

David Strong, Pepperdine University
Thomas E. Leathrum, Jacksonville University
Joe Yanik, Emporia State University
Wednesday afternoon

DRAWING ON OUR STUDENTS' THINKING TO IMPROVE THE MATHEMATICAL EDUCATION OF TEACHERS

Dale R. Oliver, Humboldt State University
Mary Kay Abbey, Montgomery College
Wednesday afternoon

HISTORY OF UNDERGRADUATE MATHEMATICS IN AMERICA, 1900–2000

Jack Winn, SUNY Farmingdale
Walter J. Meyer, Adelphi University
Joseph Malkevitch, York College of CUNY
Amy Shell-Gellasch, Grafenwoehr, Germany
Thursday morning

INITIALIZING AND SUSTAINING UNDERGRADUATE RESEARCH PROJECTS AND PROGRAMS

Margaret M. Robinson, Mount Holyoke College
Suzanne M. Lenhart, University of Tennessee
Thursday morning

PROJECTS AND DEMONSTRATIONS THAT ENHANCE A DIFFERENTIAL EQUATIONS COURSE

Richard J. Marchand, Slippery Rock University
Shawnee L. McMurrin, California State University
Thursday morning

COUNTERING "I CAN'T DO MATH": STRATEGIES FOR TEACHING UNDER-PREPARED, MATH-ANXIOUS STUDENTS

Suzanne Dorée, Augsburg College
Bonnie Gold, Monmouth College
Richard J. Jardine, Keene State College
Thursday morning

USING REAL-WORLD DATA TO ILLUSTRATE STATISTICAL CONCEPTS

Thomas L. Moore, Grinnell College
John D. McKenzie, Jr., Babson College
Thursday afternoon and Friday morning

ENVIRONMENTAL MATHEMATICS AND THE INTERDISCIPLINARY

Karen D. Bolinger, Clarion University; Ben Fusaro, Florida State University, and William D. Stone, New Mexico Institute of Mining
Friday morning

TEACHING VISUALIZATION SKILLS

Mary L. Platt, Salem State College, Catherine Gorini, Maharishi University of Management, and Sarah J. Greenwald, Appalachian State University
Friday morning

TEACHING AND ASSESSING PROBLEM SOLVING

Alex J. Heidenberg and Michael Huber, US Military Academy
Friday morning

PHILOSOPHY OF MATHEMATICS

Charles R. Hampton, The College of Wooster and Bonnie Gold, Monmouth University
The session will be punctuated with light refreshments and informal conversation, and will be followed by the POM SIGMAA annual business meeting at 6:00 p.m. If you have an

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MAA Contributed Paper SESSIONS

interest in the philosophy of mathematics, please join us on Friday.

Friday afternoon

USING HANDHELD TECHNOLOGY TO FACILITATE STUDENT-CENTERED TEACHING/LEARNING ACTIVITIES AT THE DEVELOPMENTAL ALGEBRA LEVEL

Ed Laughbaum, The Ohio State University and Maria DeLucia, Middlesex County College

Friday afternoon

MY THREE FAVORITE ORIGINAL CALCULUS PROBLEMS

J.D. Phillips, Wabash College and Timothy J. Pennings, Hope College

Saturday morning

MEETING THE CHALLENGE: RELATIONSHIP BETWEEN MATHEMATICS AND BIOLOGY IN THE 21ST CENTURY

Catherine M. Murphy, Purdue University Calumet, G. Elton Graves, Rose Hulman Institute of Technology, and David A. Smith, Duke University

Saturday morning

MATHEMATICS EXPERIENCES IN BUSINESS, INDUSTRY, AND GOVERNMENT

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

Saturday morning

MATHEMATICAL EXPERIENCES FOR STUDENTS OUTSIDE THE CLASSROOM

Kay B. Somers, Moravian College and Jody Sorensen, Grand Valley State College

Saturday afternoon

RESEARCH ON THE TEACHING AND LEARNING OF UNDERGRADUATE MATHEMATICS

William O. Martin, North Dakota State University, Barbara Edwards, Oregon State University, and Draga Vidakovic, Georgia State University

Saturday afternoon

IN-SERVICE TRAINING PROGRAMS FOR K-12 MATHEMATICS TEACHERS

Zsuzsanna Szaniszló, Valparaiso University, Judith Covington, Louisiana State University, Shreveport, and Tamas Szabo, Weber State University

Saturday afternoon

GENERAL CONTRIBUTED PAPER SESSION

Daniel E. Otero, Xavier University, Thomas A. Hern, Bowling Green State University, James K. Strayer, Lock Haven University of Pennsylvania, and Michael A. Jones, Montclair State University

Wednesday–Saturday mornings and afternoons

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.

Save the Date!

MathFest 2005
August 4–6, 2005
Albuquerque, NM



The Annual Summer Meeting of
The Mathematical Association of America



Other MAA SESSIONS

TRAINING T.A.S IN DEPARTMENTS AND AT SECTION MEETINGS

Organized by Louise A. Raphael, Howard University
Wednesday, 8:30 a.m. – 10:55 a.m.

The presenters will be Diane L. Herrmann, University of Chicago; Maria S. Terrell, Cornell University; and Thomas W. Rishel, Cornell University. How are T.A. training sessions set up? What are the similarities and differences between such sessions? How can case studies be used in support of T.A. training? How might T.A. training compare with preparing your faculty? We will provide a skeleton outline of possible training approaches for individual institutions, as well as for section-level training programs. The session is sponsored by the MAA Committee on Graduate Students.

DOCTORAL PROGRAMS IN MATHEMATICS EDUCATION: THEIR NATURE AND HOW TO FIND THEM

Organized by Robert E. Reys, University of Missouri
Wednesday, 9:30 a.m. – 10:50 a.m.

Since the year 2000 more than 120 different institutions in the United States have awarded doctorates with a major emphasis in mathematics education. These programs vary greatly in structure as well as visibility. The Association of Mathematics Teacher Educators has developed a tool to collect and disseminate information about doctoral programs in mathematics education. This session will showcase this tool and highlight some ways it might be used by faculty and students looking for doctoral programs in mathematics education.

DEVELOPING UNDERGRADUATE RESEARCH PROJECTS THAT ARE NOT IN DISCRETE MATHEMATICS

Organized by Edwin P. Herman, University of Wisconsin at Stevens Point

Wednesday, 2:15 p.m. – 3:45 p.m.

Are you looking for research ideas to give to your undergraduate students? This session includes panelists from a variety of fields who will offer advice on how to develop research topics at a level appropriate for the undergraduate. They will discuss how to identify suitable topics and how to keep your students on track, as well as how to give the students sufficient background to tackle an interesting problem. This session was organized by the 1994-2000 Project NExT Fellows to address issues of concern to faculty who have four to ten years of teaching experience. Panelists include Carl C. Cowen, Indiana University-Purdue University at Indianapolis; David W. Farmer, American Institute of Mathematics; Mario U. Martelli, Claremont McKenna College; Bruce Reznick, University of Illinois at Urbana-Champaign; and Patrick J. Van Fleet, University of St. Thomas. The session is sponsored by Project NExT.

A PROBLEM-BASED CORE PROGRAM

Organized by Donald B. Small, U.S. Military Academy
Wednesday, 9:30 a.m. – 10:50 a.m.

In 2003, the U.S. Military Academy refocused its core program to emphasize problem solving and modeling. First semester focuses on problems from management science using concepts from data analysis, matrix algebra, network theory, and Markov chains. The second semester emphasizes analyzing continuous change (differentiation of functions of one and several variables) and the third semester treats integration of one and several variables along with differential equations. The fourth semester focuses on probability and statistics. Several program threads, such as data analysis, serve to unify the four -semester core program. Gary W. Krahn and Alex J. Heidenberg of the U.S. Military Academy have been involved in the development and implementation of the refocused program. Michael E. Moody, Olin University, will address the transportability issues of this program to other schools.

CAREER PATHS FOR UNDERGRADUATES IN MATHEMATICS

Organized by James E. Hamblin, Shippensburg University; John A. Vano, University of Wisconsin at Madison; and John A. Kuchenbrod, The MITRE Corp.

Wednesday, 2:15 p.m. – 3:35 p.m.

A common question asked by undergraduates is: What can I do with a degree in mathematics? In this session, the panelists will discuss the many varied careers that an undergraduate degree can lead towards. The session is sponsored by the Young Mathematicians Network.

PH.D. PROGRAMS IN RESEARCH IN UNDERGRADUATE MATHEMATICS

Organized by John Selden, New Mexico State University

Wednesday, 2:15 p.m. – 3:35 p.m.

A number of mathematics departments have granted, and some may be considering granting, Ph.D.s whose research specialty is mathematics education. This panel will discuss examples of specific Ph.D. programs in research in undergraduate mathematics education (RUME) housed in mathematics departments. There will also be a brief description of the SIGMAA on RUME guidelines for such programs. Thus, the panel will describe both commonalities (the guidelines) and variations (the examples) among such programs. Panelists include Shandy Hauk, University of Northern Colorado; Michael Oehrtman, Arizona State University; Karen J. Graham, University of New Hampshire; and John Selden. The session is sponsored by the SIGMAA on RUME Guidelines Committee.

DEALING WITH THE TWO-BODY PROBLEM

Organized by Kimberly A. Roth, Wheeling Jesuit University, and Karrolyne Fogel, California Lutheran University

Wednesday, 3:50 p.m. – 5:10 p.m.

Finding a job for one mathematician is hard enough, but what if you need jobs for two? Panelists who have searched for a personal solution to a two-body problem will discuss their attempts at a solution, the compromises and logistics involved,

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and their degree of satisfaction with each “solution” they tried. The session is sponsored by the Young Mathematicians’ Network and Project NExT.

HOW TO INTERVIEW FOR YOUR FIRST JOB

Organized by Louise A. Raphael, Howard University

Wednesday, 3:30 p.m. – 4:50 p.m.

The presenters will be David Manderschied, University of Iowa, and Thomas W. Rishel, Cornell University. The session is sponsored by the MAA Committee on Graduate Students.

REFOCUSED COLLEGE ALGEBRA: A BASIS FOR QL PROGRAMS

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

Wednesday, 3:50 p.m. – 5:10 p.m.

Faculty in quantitative disciplines urge mathematics departments to send them students having experience with elementary data analysis, plotting and interpreting plots, problem-solving in the modeling sense, small-group work, and the use of technology. These aspects are basic to refocused college algebra programs. In addition, college algebra is the largest gateway course (in terms of student enrollment) and is thus well-positioned to provide a basis for QL programs. Panelists include Norma M. Agras, Miami-Dade College; Dora C. Ahmadi, Morehead State University; Laurette B. Foster, Prairie View A&M University; and Bernard L. Madison, University of Arkansas. The panel will be moderated by Harriet S. Pollatsek, Mount Holyoke College, and is sponsored by the MAA CUPM Subcommittee on Curriculum Renewal Across the First Two Years (CRAFTY).

WHAT FACULTY CAN DO TO PROMOTE DIVERSITY IN MATHEMATICS

Organized by T. Christine Stevens, St. Louis University;

Joseph A. Gallian, University of Minnesota Duluth; and

Aparna W. Higgins, University of Dayton

Thursday, 8:30 a.m. – 10:00 a.m.

This panel focuses on concrete steps that faculty can take, alone or in small groups, to promote diversity in mathematics. Topics include running summer programs for women or minorities; promoting the success of underrepresented groups in classes; organizing a Sonja Kovalevsky Day for middle or high school girls; successful programs that attract minorities to major in mathematics; resources that are available to assist in promoting diversity in mathematics; promoting diversity in such a way that it will further one’s career and increase one’s chance for tenure. Panelists include Deanna B. Haunsperger, Carleton College; Nathaniel Dean, Texas Southern University; Robert E. Megginson, Mathematical Sciences Research Institute; and Stephanie Fitchett, Florida Atlantic University. The session is sponsored by Project NExT.

EMERGING TECHNOLOGIES IN UNDERGRADUATE MATHEMATICS

Organized by Jack Picciuto, U.S. Military Academy

Thursday, 8:30 a.m. – 11:30 a.m.

This session and future sessions will focus on the use or proposed use of emerging technologies that could improve the learning of undergraduate mathematics. We want to begin now to examine how we can effectively use technologies that are expected to become widespread and affordable over the next five years. This year’s session will focus on the use of true three dimensional displays. Increasingly affordable three dimensional display technologies range from the old-fashioned colored glasses used in movies like *Spy Kids 3D* and *Shrek 3D* to the new Sharp notebook computer (\$3K) that displays brilliant 3D images without the need for special glasses and the inexpensive (\$10K) GeoWall 3D projection system (<http://geowall.geo.lsa.umich.edu/>) that is commonly used in the GeoScience community. This session will demonstrate or introduce some of those technologies and resources for undergraduate mathematics that exploit them. We also invite speakers to discuss lessons already learned as well as address the big questions: Are these true 3D technologies just a gimmick? Can they enhance learning? Could my school ever afford this?

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

Organized by John R. Haddock, Elizabeth J. Teles and Lee L. Zia, NSF/Division of Undergraduate Education; John S. Bradley, NSF/Division of Elementary, Secondary, and Informal Education; James H. Lightbourne, Senior Advisor for Planning, Analysis, and Policy; and Lloyd E. Douglas, NSF/Division of Mathematical Sciences

Thursday, 9:00 a.m. – 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.

RECRUITING STUDENTS FOR MATHEMATICS DEPARTMENTS

Organized by Brian Birgen, Wartburg College, and Mary D.

Shepherd, Northwest Missouri State University

Thursday, 10:30 a.m. – noon

The job opportunities for college graduates with degrees in mathematics are just about unlimited, yet the percentage of students who seek degrees in mathematics is quite small. Somehow we must do a better job recruiting students into mathematics. The members of this panel are from departments that have been able to consistently recruit large numbers of students into their mathematics program. They will describe what they and other members of their faculty do to help recruit students into mathematics. This session was organized by the 1994-2000 Project NExT Fellows to address issues of concern

to faculty who have four to ten years of teaching experience. Panelists include Genevieve M. Knight, Coppin State University; Joel S. Foisy, State University of New York-College at Potsdam; Jim Lewis, University of Nebraska; and Matthew P. Richey, St. Olaf College. The session is sponsored by Project NExT.

HOW CHANGES IN HIGH SCHOOL MATHEMATICS COULD INFLUENCE COLLEGIATE MATHEMATICS

Organized by Bernard L. Madison, University of Arkansas
Thursday, 10:45 a.m. – 12:05 p.m.

Recent changes in high school mathematics, largely influenced by the NCTM standards, have not been matched by comparable changes throughout college mathematics. The presidents of AMATYC and NCTM, an award-winning high school teacher, and the Chair of the MAA Committee on Articulation and Placement will discuss the resulting differences and implications of these differences for student learning. Panelists include Judy E. Ackerman, Montgomery College, President of AMATYC; Dan Kennedy, Baylor School; Cathy L. Seeley, University of Texas at Austin, President of NCTM; and Bernard L. Madison. The session is sponsored by the MAA Committee on Articulation and Placement.

USING THE CUPM CURRICULUM GUIDE 2004 TO GET GRANTS TO FACILITATE CHANGE

Organized by Janet L. Andersen, Hope College, and David M. Bressoud, Macalester College
Thursday, 10:45 a.m. – 12:05 p.m.

One of the under-utilized sources of NSF funding is the Adaptation and Implementation (A&I) component of the Course, Curriculum, and Laboratory Instruction (CCLI) program. This session will explain how the CUPM Curriculum Guide 2004 and its supplement, the CUPM Illustrative Resources, can be used to identify programs at other institutions that can be adapted and implemented to meet significant needs at your own institution. It will also address how to put together a CCLI-A&I grant proposal that is attractive to NSF. Panelists will include: Dennis Davenport, U.S. Military Academy; Wade Ellis, West Valley College; and Stephanie Fitchett, Florida Atlantic University.

USING CUPM CURRICULUM GUIDE 2004: ASSESSING AND IMPROVING THE PROGRAM FOR THE MAJOR IN MATHEMATICS

Organized by William E. Haver, Virginia Commonwealth University, and Harriet S. Pollatsek, Mount Holyoke College
Thursday, 1:00 p.m. – 2:20 p.m.

CUPM Guide 2004 was approved by the MAA Committee on Reports in September 2003. It has been available on MAA Online since then. Copies were mailed to all mathematical sciences departments in March 2004. The panel will describe ways departments can use CUPM Guide 2004 to develop, refine, and/or implement an assessment plan for the major program. Indeed, the first recommendation in CUPM Guide 2004 directs departments to (1) understand the strengths, weaknesses, career plans, and aspirations of their students; (2) determine the extent to which the goals of courses and programs offered are aligned with the needs of students, as well as the extent to which these

goals are achieved; and (3) strengthen courses and programs to better align with student needs, and assess the effectiveness of such efforts. Panelists will discuss efforts at a range of institutions and serving a variety of departmental missions. They include Richard M. Grassl, University of Northern Colorado; Matthew P. Richey, St. Olaf College; and R. Bruce Mattingly, SUNY Cortland. The panel will be moderated by William E. Haver.

LEARNING TO PROVE: STRATEGIES TO IMPROVE STUDENTS' PROOF WRITING SKILLS

Organized by Annie Selden, New Mexico State University; Barbara E. Edwards, Oregon State University; Nancy L. Hagelgans, Ursinus College; and Ahmed I. Zayed, DePaul University
Thursday, 1:00 p.m. – 2:20 p.m.

This session will focus on what works. There will be brief descriptions from several presenters and then participants will choose from several small group discussions. The topics addressed will include outlining the proof; the genre of proof; getting students to use definitions; and assessment of proofs, including the use of multiple drafts and peer review. The session is sponsored by the MAA Committee on the Teaching of Undergraduate Mathematics (CTUM).

UNDERGRADUATE MATHEMATICS AND NSDL: THE NATIONAL SCIENCE TECHNOLOGY ENGINEERING AND MATHEMATICS EDUCATION DIGITAL LIBRARY

Organized by Franklin A. Wattenberg, U.S. Military Academy
Thursday, 1:00 p.m. – 4:00 p.m.

In addition to the resources in the MAA's MathDL, the NSDL has a wide variety of scientifically and pedagogically outstanding resources that can be used in undergraduate mathematics courses. This session will look at resources from collections ranging across all the sciences. The emphasis is on very interactive resources that excite and engage students and that demonstrate the power and usefulness of mathematics. Speakers will include mathematicians, scientists, and engineers.

ENVIRONMENTAL MATHEMATICS SIGMAA INVITED ADDRESS, COUNCIL MEETING, AND BUSINESS MEETING

Organized by Ben Fusaro, Florida State University
Thursday, 1:00 p.m. – 3:00 p.m.

This session will begin with an Invited Address by Benoit Mandelbrot, Yale University.

YOUNG MATHEMATICIANS' NETWORK-MAA PROJECT NEXT POSTER SESSION

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

Junior mathematicians who are no more than five years beyond their Ph.D. are invited by MAA Project NExT and the Young Mathematicians' Network to submit abstracts for the session. The poster size will be 48" (length) by 36" (height). Posterboard and materials for posting pages on the posters will be provided

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on site. Applications should be submitted to Kevin E. Charlwood, kevin.charlwood@washburn.edu, and Kenneth A. Ross, ross@math.uoregon.edu, by December 7, 2004.

SPEAKING OF MATHEMATICS

Organized by Jon T. Jacobsen, Harvey Mudd College, and Lewis D. Ludwig, Denison College

Thursday, 2:30 p.m. – 3:50 p.m.

The purpose of this panel is to share techniques for improving students' oral communication skills. Communication is an integral part of mathematics and professional life. Students have ample opportunities to communicate with their professors and peers, but are often challenged when it comes to communicating to the nonspecialist. This is particularly relevant in mathematics, with its many special symbols and notations. Panelists Joseph A. Gallian, University of Minnesota at Duluth, Jon T. Jacobsen, and Lewis D. Ludwig will share their curricular and extended efforts developed to hone these skills. For example, panelist Jacobsen has developed a course where students give expository talks of varying lengths and provide peer feedback. Some talks are videotaped for their benefit. Panelist Ludwig has integrated oral communication into Denison's "Introduction to Proofs" course in a novel way. Panelist Gallian is also a well-recognized expert in communication. We hope to provide a forum for the exchange of ideas towards improving this fundamental skill in our nation's undergraduate mathematics education.

THE SENIOR SEMINAR OR 'CAPSTONE' EXPERIENCE FOR UNDERGRADUATE MATHEMATICS MAJORS

Organized by Pádraig M. McLoughlin, Morehouse College

Thursday, 2:30 p.m. – 3:50 p.m.

More and more faculty and mathematics departments seem to indicate that part of an undergraduate mathematics program should include some undergraduate research. However, while it seems that the 'capstone' experience has been adopted, there are several versions of a Senior Seminar at colleges and universities. This session is designed to compare or contrast programs or to propose a model for the Senior Seminar. A panel of faculty from various departments will describe their undergraduate capstone, thesis, or senior seminar programs. Then a discussion will focus on innovations that support or create sustainable end-of-program experiences for undergraduates. The panel will discuss techniques used in the program, appropriate problems, how the experience is assessed, whether it is a one term or full year experience, the amount of writing required or expected, amount of faculty involvement in the program, if the capstone experience has been an attractor for more majors, and successes or limitations of the programs. Panelists include Colin L. Starr, Willamette University; Xinxin Jiang, Rhodes College; John W. Emert, Ball State University; Carol S. Schumacher, Kenyon College; David Brown, Ithaca College; Abdelikrim Brania, Morehouse College; and Michael Johnson, U.S. Military Academy.

MOORE METHOD CALCULUS BY THOSE WHO DO IT

Organized by James P. Ochoa, Hardin-Simmons University, and William T. Mahavier, Lamar University

Thursday, 3:15 p.m. – 4:35 p.m.

This panel discussion addresses the use of the Moore Method in the teaching of calculus. Each panelist has numerous years of experience using the Moore Method in calculus courses. Panelists will discuss how they have adapted the Moore Method to calculus courses. Cooperative learning, inquiry-based learning, and problem-based learning will also be discussed. Materials are available for those who are interested in using the Moore method. Panelists will talk about these materials. This session will be the 4th in a series of highly successful panel sessions offered in 1999, 2001, and 2003. Previous sessions were well attended, videotaped, and archived for their historical significance. Panelists include: Charles S. Allen, Drury University; Gregory D. Foley, Appalachian State University; Tom Ingram, Baylor University; and William T. Mahavier.

HISTORY OF MATHEMATICS SIGMAA ANNUAL MEETING AND GUEST LECTURE

Organized by Amy Shell-Gellasch, Grafenwoer, Germany

Thursday, 6:00 p.m. – 8:00 p.m.

Thomas Archibald, Dibner Institute at MIT and Arcadia University, will speak on *John Charles Fields: A career in mathematics*. For more information, please go to the HOM SIGMAA website, accessible from the MAA website, or contact Amy Shell-Gellasch at amy.shellgellasch@us.army.mil.

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

Organized by John R. Haddock, Elizabeth J. Teles and Lee L. Zia, NSF/Division of Undergraduate Education

Friday, 9:00 a.m. – 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.

LONG-TERM MATHEMATICS FACULTY OUTSIDE OF THE TENURE TRACK: POSSIBILITIES, PITFALLS, AND PRACTICALITIES

Organized by David J. Lutzer, College of William and Mary

Friday, 9:00 a.m. – 10:20 a.m.

Panel members will discuss issues associated with long-term mathematics faculty outside of the tenure track who focus primarily on teaching. The CBMS2000 report and the lead story in the April 16, 2004 *Chronicle for Higher Education* show that such faculty members are more and more common in mathematics departments. The panel's focus is not on whether a department should use such faculty but rather on options for long-term job security in case a department decides to use non-tenure-track faculty to cover its courses. Such job security allows these faculty to enter more fully into the department's advising and curriculum planning (especially at the lower division), thereby addressing issues in the MAA Board of

Governor's resolution on non-tenure-track teaching faculty, which is currently available at <http://www.mathsci.appstate.edu/~sjg/maasciencepolicycommittee/res2.html>. Panel members will present the perspectives of department chairs and of long-term non-tenure-track faculty in mathematics departments. Panelists include Susan C. Geller, Texas A&M University; Joel K. Haack, University of Northern Iowa; David R. Morrison, Duke University; and David J. Lutzer. The session is sponsored by the MAA Committee on the Profession.

JUST THE FACTS: PROFILES AND INFERENCES FROM DATA ON PERMANENTLY TEMPORARY FACULTY

Organized by Kevin Charlwood, Wabash University; Judith L. Baxter, University of Illinois-Chicago; and Bettye Anne Case, Florida State University

Friday, 1:00 p.m. – 2:20 p.m.

Panelists will provide a description of the non-tenure-stream faculty and the perceptions and realities of the contributions they make to undergraduate education in the mathematical sciences. Despite their critical and varied roles in mathematics departments, they typically operate in a separate fiefdom from the rest of their colleagues. Discussion will center on data available from AMS Annual Surveys, the CBMS Survey (2000), and NRC/NAS data, and on some important inferences from this data as to the impact on departments of full-time lecturers, adjuncts, and other faculty who are employed for long periods of time, but who are not in the professorial ranks. Panelists include Mary W. Gray, American University; Pat Shure, University of Michigan; Stephen B. Rodi, Austin Community College; James W. Maxwell, AMS; and Bettye Anne Case. The panel will be moderated by Kevin Charlwood and is sponsored by the MAA/AMS Joint Committee on Teaching Assistants and Part-Time Instructors (TA/PTI).

USING MATHEMATICALLY RICH ACTIVITIES TO DEVELOP K-12 CURRICULA: PART I

Organized by Robert P. Moses, Cambridge, MA; Robert E. Megginson, Mathematical Sciences Research Institute; and Ed Dubinsky, Kent State University

Friday 9:00 a.m. – 10:55 a.m.

Many early elementary mathematics curricula make extensive use of manipulatives to introduce the basic arithmetic of rational numbers. By the time pre-algebra and algebra classes are taught, drawing on physical experience to motivate the underlying mathematical concepts is rarely done. The purpose of this special presentation is to introduce and explore the ideas inherent in employing mathematically rich activities to develop curricula, especially at the late middle/early high school level. The "Road Coloring Problem", an example of such a "mathematically rich activity" will be introduced. Participants in the session will work through a portion of the 9th grade curriculum, developed under an NSF grant to the Algebra Project, surrounding this unsolved problem that is still under active investigation. This hands-on activity will be used to initiate discussion of the usefulness of the approach, and to discuss other mathematically rich activities that could possibly be developed in the same manner. The Algebra Project

demonstration will be led by Gregory M. Budzban, Southern Illinois University, and Robert P. Moses. This will be followed by brief presentations of alternative approaches in a similar spirit by David W. Henderson, Cornell University; William G. McCallum, University of Arizona; and Ed Dubinsky. Part II of the presentation is scheduled for Saturday, 1:00 p.m. – 3:00 p.m.

SPECIAL PROGRAMS AND STRATEGIES TO REACH UNDERREPRESENTED POPULATIONS

Organized by Elizabeth (Betsy) Yanik, Emporia State University; Jennifer Hontz, Meredith College; and Kathleen Sullivan, Seattle University

Friday 9:00 a.m. – 11:00 a.m.

This poster session is designed to publicize successful activities which have been used to attract and encourage under-represented populations in mathematics. It is expected that posters representing a wide range of programming would be appropriate for this session. Efforts such as after school clubs, special conferences, mentoring programs, and summer camps are just a few of the possible formats that might be highlighted. Recipients of grants from the Tensor Foundation or the NSF programs in Gender Diversity in STEM Education or Informal Science, might be particularly interested in sending in a poster proposal. Those who are conducting pilot projects or beginning projects are also welcome to submit a poster proposal to present in this session.

Send title and abstract by e-mail to yanikeli@emporia.edu, or by regular mail to Betsy Yanik, Department of Mathematics and Computer Science, Emporia State University, Emporia, KS 66801 by December 7, 2004. Include author's name, address, phone number, e-mail, and affiliation. Trifold, self-standing 48" by 36" tabletop posters will be provided. Additional material or equipment is the responsibility of the presenters. The session is sponsored by the Committee on the Participation of Women and the Women and Mathematics Network.

THE GREAT DIVIDE: GRAPHING CALCULATORS IN SECONDARY AND COLLEGE EDUCATION

Organized by Thomas W. Tucker, Colgate University

Friday, 1:00 p.m. – 2:20 p.m.

A major, perhaps the major, articulation problem between secondary and college mathematics education is the use of graphing calculators. Nearly all secondary teachers have probably operated a graphing calculator in the last month, while the majority of college teachers haven't operated one in many years, if ever. The debates about the uses of technology in mathematics education ended for computers years ago with acceptance at both the secondary and college level, but for graphing calculators the debates ended with different conclusions: widespread and whole-hearted adoption at the secondary level, and sporadic support, benign neglect, or outright antipathy, at the college level. Worse, this state of affairs seems to be news to both camps. At the least, dialogue is needed, which this panel will provide. Panelists include Gail F. Burrill, Michigan State University, former President NCTM; Raymond J. Cannon, Baylor University, College Board Advanced Placement Program; Richard H. Escobales, Canisius College;

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and Thomas Tucker. The session is sponsored by the MAA Committee on Articulation and Placement.

PLANNING A SABBATICAL

Organized by Jeffrey T. Barton, Birmingham-Southern College; Bernadette Mullins, Birmingham-Southern College; and Barry S. Spieler, Birmingham-Southern College

Friday, 1:00 p.m. – 2:30 p.m.

Do you want to spend your sabbatical doing research, writing a textbook, working for a government agency, or something entirely different? Our panelists will discuss their varied experiences and answer questions about every step of the process from generating ideas, to writing a proposal, to working out the logistics, and funding your sabbatical. This session was organized by the 1994-2000 Project NExT Fellows to address issues of concern to faculty who have four to ten years of teaching experience. Panelists include William A. Marion, Valparaiso University; Neil Portnoy, Stony Brook University; and Barbara Reynolds, Cardinal Stritch University. The session is sponsored by Project NExT.

PROJECTS SUPPORTED BY THE NSF DIVISION OF UNDERGRADUATE EDUCATION

Organized by Jon W. Scott, Montgomery College

Friday, 1:00 p.m. – 3:00 p.m.

This session will feature principal investigators (PIs) presenting progress and outcomes from various NSF funded projects in the Division of Undergraduate Education. The poster session format will permit ample opportunity for attendees to engage in small group discussions with the PIs and to network with each other. Information about presenters and their projects will appear in the program.

CLASSROOM NETWORKS FOR DEVELOPING MATHEMATICAL UNDERSTANDING

Organized by Franklin D. Demana, The Ohio State University, and Jeremy Roschelle, SRI International

Friday, 2:30 p.m. – 3:50 p.m.

In this session, we will explore the range of new possibilities that classroom networks bring to teaching and learning mathematics. Classroom networks connect student graphing calculators to a central computer and a project display, enabling the teacher to more quickly distribute and harvest student work. In one application, students can each graph a target function that fits some criteria (e.g., find a curve that fits these data points). The lecturer can then explore students' differing mathematical solutions to these problems. Possible generalizations can thus emerge from students' work. Presenters will discuss their applications of classroom network technology, and how this technology improves classroom teaching and learning. Panelist will include James J. Kaput, University of Massachusetts, Dartmouth; Walter Stroup, University of Texas, Austin; and Louis Abrahamson, Better Education, Inc.

PRESENTATIONS BY TEACHING AWARD RECIPIENTS

Friday, 2:30 p.m. – 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.

INFORMATION SESSION ON ACTUARIAL EDUCATION

Organized by Bettye Anne Case and Steve Paris, Florida State University; Matthew J. Hassett, Arizona State University; and Krzysztof M. Ostaszewski, Illinois State University

Friday, 2:45 p.m. – 4:45 p.m.

There will be a presentation by Richard London, University of Connecticut, on the dramatic changes in the professional actuarial education system effective in 2005, followed by an open information discussion. Refreshments will be provided.

WEB SIGMA BUSINESS MEETING

Organized by Kirby A. Baker

University of California Los Angeles.

Friday, 4:00 p.m. – 5:00 p.m.

SYSTEM WIDE QUANTITATIVE LITERACY INITIATIVES

Organized by Judith F. Moran, Trinity College, Caren L. Diefenderfer, Hollins University

Friday, 4:00 p.m. – 5:20 p.m.

Representatives from Washington, Illinois, and Georgia will discuss efforts in their states to implement statewide QL standards and programs. Joined by a national leader in the QL effort, they will be discussing issues of definitions, standards, assessment, articulation agreements, and political hurdles. Panelists include: Linda R. Sons, Northern Illinois University; Kathleen B. Burk, Pensacola Junior College; Kimberly M. Vincent, Washington State University; and Bernard L. Madison, University of Arkansas. A reception will follow the panel discussion. The session is sponsored by the SIGMAA for Quantitative Literacy.

REVISITING CROSSROADS: THE TEACHING AND LEARNING OF MATHEMATICS IN TWO-YEAR COLLEGES

Organized by Susan S. Wood

J. Sargeant Reynolds Community College

Saturday, 9:00 a.m. – 10:20 a.m.

Panelists will update attendees on the progress of the project to revisit the 1995 AMATYC Standards with attention to the student and learning, faculty and teaching, mathematics content challenges, assessment, and connections with outside communities. A written document that emphasizes implementation and builds on the 1995 Crossroads will be released in fall 2006 with supporting digital products that use a variety of media. Connections to MAA's CUPM Curriculum Guide 2004 will be discussed, as well as strategies for implementing change. 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 engage attendees in dialogue about recommendations for teaching, learning, and assessing mathematics in the first two years of college. Audience participation and feedback will be used by the writing team for the AMATYC Crossroads Revisited Project. Panelists include: Judy E. Ackerman, Montgomery College; Susan L. Ganter, Clemson University; and Susan S. Wood.

MAA/RUME PANEL DISCUSSION ON THE ICME-10 MEETING

Organized by Martha J. Siegel, Towson University, and Andy R. Magid, University of Oklahoma

Saturday, 9:00 a.m. – 10:20 a.m.

Panelists will report on international perspectives on mathematics education gleaned from the ICME-10 meeting in Copenhagen.

FIRST-SEMESTER CALCULUS: MEETING THE NEEDS OF OUR STUDENTS

Organized by David M. Bressoud, Macalester College, and William E. Haver, Virginia Commonwealth University

Saturday, 1:00 p.m. – 2:20 p.m.

Once upon a time mainstream first-semester calculus was the first exposure to calculus for students going into mathematically intensive majors. It presupposed its students were among the strongest in mathematics, had not studied calculus before college, and would continue in calculus beyond this course. In many colleges and universities, the course has not changed, but the student audience has. Many of the strongest students do not take first-semester calculus in college. Many of the students who start with this course and want to pursue a full year of calculus need more help to succeed in it. Many students, especially those in the biological or life sciences, take it with no intention of taking a second course in calculus. The CUPM Curriculum Guide 2004 calls on departments to “determine the extent to which the goals of courses and programs offered are aligned with the needs of students.” This panel will suggest ways to recast this course so that it meets actual student needs.

FACULTY DEVELOPMENT FOR ADJUNCTS AND NEW FACULTY

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

Saturday, 1:00 p.m. – 2:20 p.m.

Adjuncts teach the majority of sections of beginning level courses in many two-year colleges and universities. For the most part, these people only have responsibility for their own sections and are not integrated into the workings of their department, thus making it more difficult for beginning level courses to act as a pump for upper level courses. The panelists will discuss successful faculty development programs for adjunct and new faculty. Panelists include Michael D. Phillips, U.S. Military Academy; William E. Haver, Virginia Commonwealth University; Robert Kimball, Wake Tech Community College; and Pat Shure, University of Michigan. The panel will be moderated by Philip H. Mahler, Middlesex Community College, and is sponsored by the MAA CUPM Subcommittee on Curriculum Renewal Across the First Two Years (CRAFTY).

USING MATHEMATICALLY RICH ACTIVITIES TO DEVELOP K-12 CURRICULA, PART II

Organized by Robert P. Moses, Cambridge, MA; Robert E. Megginson, Mathematical Sciences Research Institute; and Ed Dubinsky, Kent State University

Saturday, 1:00 p.m. – 3:00 p.m.

Many early elementary mathematics curricula make extensive use of manipulatives to introduce the basic arithmetic of rational numbers. By the time pre-algebra and algebra classes are taught, drawing on physical experience to motivate the underlying mathematical concepts is rarely done. The purpose of this presentation is to introduce and explore the ideas inherent in employing mathematically rich activities to develop curricula, especially at the late middle/early high school level. Discussion of the “Road Coloring Problem”, the example of such a “mathematically rich activity” introduced in Part I will be continued. Participants in the session will work through a portion of the 9th grade curriculum, developed under an NSF grant to the Algebra Project, surrounding this unsolved problem that is still under active investigation. This hands-on activity will be used to continue discussion of the usefulness of the approach, after which there will be a panel discussion of the ideas presented in this special session. The panelists will be: William G. McCallum, University of Arizona, Judith Roitman, University of Kansas, and Robert P. Moses. (Part I of this discussion was scheduled on Friday, 9:00-10:55 a.m.).

MATHEMATICAL OUTREACH AND THE ENVIRONMENT

Organized by Patricia Clark Kenschaft

Montclair State University

Saturday, 2:30 p.m. – 3:50 p.m.

The panel will focus on how environmental issues can be used as a vehicle for mathematicians’ outreach into the community. Three forms of this outreach will be explored, followed by audience discussion. Speakers include James M. Wright, Green Mountain College, Media, Mathematics, and the Environment; Michael P. Cohen, Assistant Director for Survey Programs, Bureau of Transportation Statistics, Government Careers in Mathematics and the Environment; and William Dean Stone, New Mexico Tech, Earth Day Talks: High School Outreach. The session is sponsored by the MAA Committee on Mathematics and the Environment.

OPEN DISCUSSION ON REFOCUSING THE COURSES BEFORE CALCULUS

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

Saturday, 2:30 p.m. – 3:50 p.m.

The moderator, Jack Bookman, Duke University, and panelists, Nancy Baxter Hastings, Dickinson College, and Bruce Crowder, Oklahoma State University are active members of the combined MAA/AMATYC/NCTM committee that is leading a national movement to refocus college algebra/precalculus courses. They will address the activities of this committee as well as CRAFTY’s Position Paper on courses below calculus. The session is sponsored by the MAA CUPM Subcommittee on Curriculum Renewal Across the First Two Years (CRAFTY).

88th Annual Meeting of the MAA

MAA student ACTIVITIES

STUDENT LECTURE

VICTORIAN COMBINATORICS

Robin J. Wilson, The Open University

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, or by regular mail to Mario Martelli, Mathematics Department, Claremont McKenna College, Claremont, CA 91711) by December 7, 2004. Include author's name, address, phone number, e-mail, affiliation, name and affiliation of faculty advisor, name of the sponsoring program (NSF-REU, NSA etc), and request of an electronic outlet if needed for the presentation. When the poster is authored by more than one student, please indicate the one who will communicate with the organizer. Notification of acceptance will be e-mailed 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, The Moore Foundation, and CUR. Trifold, self-standing 48" by 36" tabletop posterboard will be provided. Additional material or equipment is the responsibility of the presenters.

MAA short COURSE

EIGHT LECTURES ON RANDOM GRAPHS

Organized by Alan M. Frieze, Carnegie Mellon University

Monday and Tuesday, January 3 and 4

The subject began properly with a sequence of seminal papers in the 1960's by Paul Erdős and Alfred Rényi. Erdős had already used randomly generated graphs as a tool for showing the existence of various structures, but these papers began the study of random graphs as objects in their own right. Since that time there has been much research establishing the likely structure of various models of random graph and finding uses for this knowledge. In this course we provide some of the basic results and tools used in the area. Presenters include Thomas A. Bohman, Carnegie Mellon University, *Evolution of $G_{n,m}$* , Oleg Pikhurko, Carnegie Mellon University, *Thresholds for some basic properties*; Benny Sudakov, Princeton University, *Probabilistic Method*; Andrzej Ruciński, Adam Mickiewicz University, *Small subgraphs*; Nick Wormald, University of Waterloo, *Random regular graphs*; Dimitris Achlioptas, Microsoft Research, *Graph coloring and random k-SAT*; Michael Molloy, University of Toronto, Title to be announced; and Alan M. Frieze, Carnegie Mellon University, *Web graphs*.

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 at the back of this issue, or see http://www.ams.org/amsmtgs/2091_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.

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, 11:45 a.m. – 12:15 p.m.

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



The state capitol

111th Annual Meeting of the AMS

AMS invited ADDRESSES

COLLOQUIUM LECTURES

HOW POLYNOMIALS VANISH: SINGULARITIES, INTEGRALS, AND IDEALS

Robert K. Lazarsfeld, University of Michigan

Wednesday, Thursday, and Friday, 1:00 p.m.

TITLE TO BE ANNOUNCED

Bruce A. Kleiner, University of Michigan, Ann Arbor

Wednesday, 10:05 a.m.

JOSIAH WILLARD GIBBS LECTURE THE INTERPLAY BETWEEN ANALYSIS AND ALGORITHMS

Ingrid Daubechies, Princeton University

Wednesday, 8:30 p.m.

EMBEDDED CURVES AND GROMOV-WITTEN INVARIANTS

Eleny Ionel, University of Wisconsin

Thursday, 2:15 p.m.

THE POWER AND WEAKNESS OF RANDOMNESS (WHEN YOU ARE SHORT ON TIME)

Avi Wigderson, Institute for Advanced Study

Thursday, 3:20 p.m.

RECENT DEVELOPMENTS IN INVERSE PROBLEMS

Gunther Uhlmann, University of Washington

Friday, 9:00 a.m.

TITLE TO BE ANNOUNCED

Steven M. Zelditch, Johns Hopkins University

Friday, 10:05 a.m.

AMS special SESSIONS

Some sessions are cosponsored with other organizations. These are noted within the parentheses at the end of each listing, where applicable. Time frames are tentative.

ALGEBRAIC GEOMETRY CODES

Shuhong Gao and Gretchen L. Matthews, Clemson University

Friday afternoon

ALGORITHMIC ALGEBRAIC AND ANALYTIC GEOMETRY

Saugata Basu, Georgia Institute of Technology, Victoria A. Powers, Emory University, Mika K. Sepälä, Florida State University, Tanush T. Shaska, University of Idaho, and Emil J. Volcheck, National Security Agency

Friday and Saturday mornings and Saturday afternoon.

ANALYSIS AND APPLICATIONS IN NONLINEAR PARTIAL DIFFERENTIAL EQUATIONS

Michael T. Lacey, Jason L. Metcalfe, Gerd Mockenhaupt, Ronghua Pan, and Andrzej J. Swiech, Georgia Institute of Technology (AMS-SIAM)

Saturday morning and afternoon

ANALYSIS PROBLEMS IN MODERN PHYSICS

Steven M. Zelditch, Johns Hopkins University

Wednesday and Thursday mornings and Thursday afternoon

ARITHMETIC ALGEBRAIC GEOMETRY

Matthew H. Baker and Dino J. Lorenzini

University of Georgia

Friday morning and Saturday afternoon

COMMUTATIVE ALGEBRA

Srikanth B. Iyengar, University of Missouri, Sean M. Sather-Wagstaff, University of Illinois at Urbana-Champaign, Anurag K. Singh, Georgia Institute of Technology, and Carolyn A. Yackel, Mercer University

Wednesday and Thursday mornings and Wednesday afternoon

COMPLEX AND FUNCTIONAL ANALYSIS

Mihaly Bakonyi, Georgia State University, and Imre Patyi, University of California San Diego

Saturday morning and afternoon

CURRENT EVENTS

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

Friday afternoon

DESIGN THEORY AND GRAPH THEORY

Mike Daven, Mount Saint Mary College, and Atif A. Abueida, University of Dayton

Wednesday morning and afternoon

D-MODULES

Steven Sperber, University of Minnesota, Minneapolis, and Uli Walther, Purdue University

Wednesday morning and afternoon

DYNAMIC EQUATIONS ON TIME SCALES: INTEGER SEQUENCES AND RATIONAL MAPS

Martin J. Bohner, University of Missouri-Rolla, Marc A. Chamberland, Grinnell College, Billur Kaymakçalan, Georgia Southern University, Allan C. Peterson, University of Nebraska-Lincoln, and Diana M. Thomas, Montclair State University

Wednesday and Thursday mornings and afternoons

DYNAMICS OF MAPPING CLASS GROUPS ON MODULI SPACES

Richard J. Brown, American University

Friday morning and Saturday afternoon

AMS special SESSIONS

INTEGRABLE SYSTEMS AND SPECIAL FUNCTIONS

Andras Balogh, University of Texas-Pan American, Mourad E. H. Ismail, University of Central Florida, Wen-Xiu Ma, University of South Florida, and Zhijun Qiao, Los Alamos National Laboratory (AMS-SIAM)

Friday and Saturday mornings, and Saturday afternoon

INVERSE SPECTRAL GEOMETRY

Carolyn S. Gordon, Dartmouth University, and Ruth Gornet and Peter A. Perry, University of Kentucky

Friday and Saturday mornings and Saturday afternoon

IN THE WAKE OF JACOBI AND HAMILTON 200 YEARS LATER

Maria-Clara Nucci, University of Perugia, and Pavel Winternitz, Centre de Recherches Mathématiques, Université de Montréal

Wednesday morning and Thursday afternoon

MATHEMATICAL IMAGE PROCESSING

Jianhong Shen, University of Minnesota, Minneapolis, and Tony F. Chan, University of California Los Angeles. (AMS-SIAM)

Wednesday morning and afternoon

MATHEMATICAL SCIENCES CONTRIBUTIONS TO THE BIOMEDICAL SCIENCES

Peter D. March, Ohio State University, De Witt L. Sumners, Florida State University, and John Whitmarsh, The National Institutes of Health.

Thursday morning and afternoon

MATHEMATICAL SCIENCES RESEARCH FOR THE DEPARTMENT OF ENERGY'S COMPUTATIONAL BIOLOGY NEEDS

Jennifer R. Slimowitz, Board on Mathematical Sciences and Their Applications

Wednesday afternoon

MATHEMATICIANS' WORK ON MATHEMATICS EDUCATION

William G. McCallum, University of Arizona. (AMS)

Friday afternoon

MATHEMATICS AND MATHEMATICS EDUCATION IN FIBER ARTS

Sarah-Marie Belcastro, Xavier University, and Carolyn A. Yackel, Mercer University

Friday afternoon

MODULAR REPRESENTATION THEORY OF FINITE AND ALGEBRAIC GROUPS

David J. Hemmer, University of Toledo, and Cornelius Pillen, University of South Alabama

Friday and Saturday mornings and Saturday afternoon

NONSMOOTH ANALYSIS IN VARIATIONAL AND IMAGING PROBLEMS

M. Zuhair Nashed, University of Central Florida, and Otmar Scherzer, University of Innsbruck (AMS-SIAM)

Friday and Saturday mornings and Saturday afternoon

ORTHOGONAL POLYNOMIALS—RANDOM MATRICES—INTEGRABLE SYSTEMS: INTERDISCIPLINARY ASPECTS

Jinho Baik, University of Michigan, Ann Arbor, Steven B. Damelin, Georgia Southern University, and Peter D. Miller, University of Michigan, Ann Arbor (AMS-SIAM)

Thursday morning and afternoon

QUANTUM TOPOLOGY

Stavros Garoufalidis and T. T. Q. Le

Georgia Institute of Technology

Thursday morning and afternoon

RADON TRANSFORM AND INVERSE PROBLEMS

Adel Faridani, Oregon State University, Gestur Olafsson, Louisiana State University, and Todd Quinto, Tufts University

Wednesday and Thursday mornings and afternoons

REACTION DIFFUSION EQUATIONS AND APPLICATIONS

Xu-Yan Chen, Georgia Institute of Technology, Yuanwei Qi, University of Central Florida, Junping Shi, The College of William and Mary, and Ratnasingham Shivaji, Mississippi State University. (AMS-SIAM)

Friday morning and afternoon

RECENT ADVANCES IN MATHEMATICAL ECOLOGY

Semen Koksals, Florida Institute of Technology, Sebastian Schreiber, The College of William and Mary, and Robert van Woesik, Florida Institute of Technology (AMS-SIAM)

Friday morning and afternoon

REPRESENTATIONS OF LIE ALGEBRAS

Brian D. Boe, University of Georgia, Ben L. Cox, College of Charleston, Vyacheslav M. Futorny, Universidade de Sao Paulo, William A. Graham, University of Georgia, Duncan J. Melville, St. Lawrence University, and Daniel K. Nakano, University of Georgia

Wednesday and Thursday afternoons and Thursday morning

REVERSE MATHEMATICS

Jeff L. Hirst, Appalachian State University, and Reed Solomon, University of Connecticut (AMS-ASL)

Wednesday and Thursday mornings, and Thursday afternoon

RIEMANNIAN GEOMETRY

Igor Belegradek, Georgia Institute of Technology, and Mohammad Ghomi, Georgia Institute of Technology and Pennsylvania State University

Wednesday and Thursday mornings and Wednesday afternoon

SPACES OF VECTOR-VALUED FUNCTIONS

Terje Høim, Florida Atlantic University, and David A. Robbins, Trinity College
Friday morning and afternoon

STOCHASTIC, LARGE-SCALE, AND HYBRID SYSTEMS

A. S. Vatsala, University of Louisiana at Lafayette, and G. S. Ladde, University of Texas at Arlington (AMS-SIAM)
Thursday morning and afternoon

THEORETICAL AND COMPUTATIONAL ASPECTS OF INVERSE PROBLEMS

Gunther Uhlmann, University of Washington, and David L. Colton, University of Delaware (AMS-SIAM)
Wednesday and Thursday mornings and afternoons

TOPICS IN GEOMETRIC FUNCTION THEORY

Abdelkrim Farouk Brania, Morehouse College, David A. Herron, University of Cincinnati, and Shanshuang Yang, Emory University
Friday afternoon and Saturday morning

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. See <http://www.ams.org/meetings/abstracts/> for the form. Select AMS CP 1 as the event code.



Stone Mountain Lake

other AMS SESSIONS

DO THE MATH!

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

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

This is an updated version of the popular game Who Wants To Be A Mathematician. This year, eight high school students from Atlanta and the surrounding region will have a chance to win \$4000 by answering questions about mathematics. Contestants can ask for help from anyone in 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.

THE CONTINUUM HYPOTHESIS REVISITED: NEW PERSPECTIVES

Moderated by Keith Devlin, Stanford University

Thursday, 10:30 a.m. to noon

Presenters include Paul J. Cohen, Stanford University, Donald A. Martin, University of California Los Angeles, and W. Hugh Woodin, University of California Berkeley. This panel is cosponsored by the Association for Symbolic Logic.

T.A. DEVELOPMENT USING CASE STUDIES: A WORKSHOP FOR FACULTY

Friday, 9:30 a.m. – 10:55 a.m. and 1:00 p.m. – 2:30 p.m.

Solomon Friedberg, Boston University, will guide workshop participants in the effective use of the case studies method as a tool in preparing Teaching Assistants for their important roles as classroom instructors. The faculty edition of the publication *Teaching Mathematics in Colleges and Universities: Case Studies for Today's Classroom* will be provided to workshop participants at no charge, compliments of the AMS. For more information on the publication, visit the AMS Bookstore (<http://www.ams.org/bookstore>) and enter "CBMATH/10.F" in the Quick Search window. There is a separate registration fee of \$20 to participate; see the registration and housing form. There are also modest travel grants for this workshop available on a very limited basis. For the application process and other details see www.ams.org/amsmtg/2091_amswork.html.

AMS COMMITTEE ON SCIENCE POLICY PANEL DISCUSSION

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

AMS COMMITTEE ON EDUCATION PANEL DISCUSSION

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

AMS short COURSE

This two-day course on Radon Transform and Applications to Inverse Problems is organized by Gestur Olafsson, Louisiana State University, and Todd Quinto, Tufts University, takes place on Monday and Tuesday, January 3 and 4. Please see the complete article at http://www.ams.org/amsmtgs/2091_intro.html. Speakers are Todd Quinto, An introduction to tomography and radon transforms; Adel Faridani, Oregon State University, Tomography and sampling theory; Alfred Louis, Universitaet des Saarlandes, Development of algorithms in CT; Peter Kuchment, Texas A&M University, Generalized transforms of radon type and their applications; Liliana Borcea, Rice University, Coherent interferometric array imaging in random media; and Peter Massopust, Tuboscope Pipeline Services, Inverse problems in pipeline inspection. There are separate registration fees to participate. See the fee schedule on the registration form on page 39.

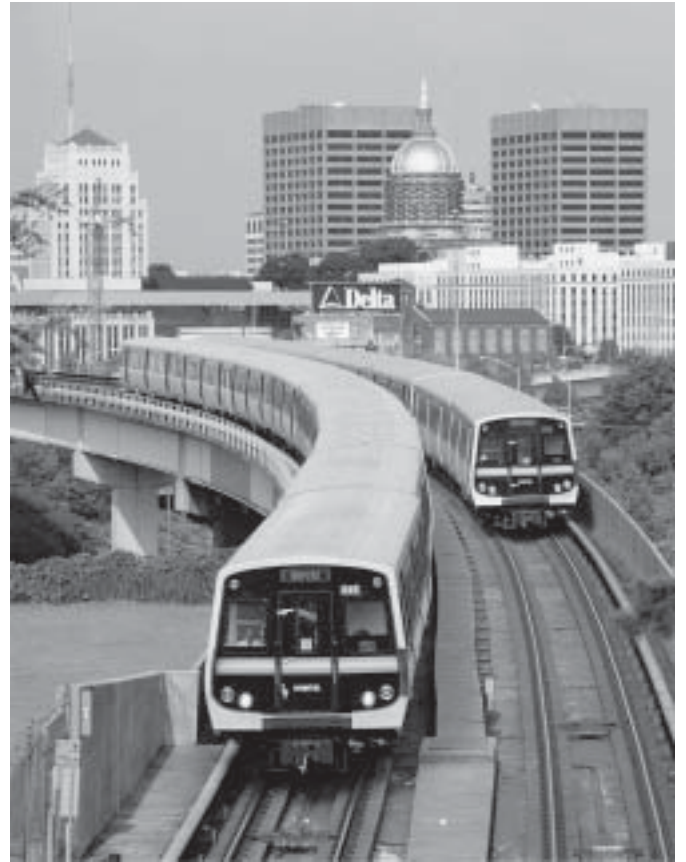
other AMS EVENTS

COUNCIL MEETING

Tuesday, 1:30 p.m.

BUSINESS MEETING

Saturday, 11:10 a.m.



MARTA train in front of Atlanta's Capitol building

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 Mathias Aschenbrenner, University of Illinois at Chicago, *Asymptotic differential algebra*; Andres Caicedo, Institut für formale Logik (Vienna), *Projective well-orderings of the reals*; Tetsuya Ishii, University of Kansas, Lawrence, *The nonstationary ideal and club guessing ideals*; Olivier Lessman, University of Oxford, *A survey of excellence*; Joseph Mileti, University of Illinois at Urbana-Champaign, *Partition theorems and computability theory*; Bjorn Pooned, University of California, Berkeley, *Extensions of Hilbert’s Tenth Problem*; and W. Hugh Woodin, University of California Berkeley, *Structural equivalences for the determinacy of real games*. See also the Special Session jointly sponsored by the ASL in the “AMS Special Sessions” section.

Association for Women in Mathematics (AWM)

TWENTY-SIXTH ANNUAL EMMY NOETHER LECTURE

Lai-Sang Young, Courant Institute, New York University
From limit cycles to strange attractors
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.

ACHIEVING DIVERSITY IN GRADUATE PROGRAMS, PART I: THE CHALLENGE TO RETAIN WOMEN

Organized by Suzanne M. Lenhart, University of Tennessee, and Sylvia T. Bozeman, Spelman College
Wednesday, 3:20 p.m. – 4:20 p.m.

This panel discussion is cosponsored by the National Association of Mathematicians; see the description of Part II of this presentation on Saturday at 9:00 a.m. under NAM’s listing of events.

Just before 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 (see the AWM inclusion in the “Joint Sessions” section at the beginning of this announcement).

BUSINESS MEETING

Wednesday, 4:20 p.m. – 4:50 p.m.

FOCUS: FUTURE

Wednesday, 4:50 p.m. – 5:30 p.m.

At the conclusion of the Business Meeting, members and others interested in the AWM are invited to come and share ideas at this session organized by the AWM Long Range Planning Committee. Helen Moore, American Institute of Mathematics, will serve as moderator.

WORKSHOP

Saturday, 8:30 a.m. – 5:00 p.m.

With funding from the Office of Naval Research and the National Security Agency (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. Organizers are Dawn A. Lott, New Jersey Institute of Technology, Judy L. Walker, University of Nebraska, and Claudia Polini, University of Notre Dame.

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. 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, 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.

National Association of Mathematicians (NAM)

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.

Activities of Other Organizations

ACHIEVING DIVERSITY IN GRADUATE PROGRAMS, PART II: THE CHALLENGE TO RETAIN UNDERREPRESENTED GROUPS

Organized by Nathaniel Dean, Texas Southern University, and Rhonda J. Hughes, Bryn Mawr College

Saturday, 9:00 a.m. – 9:50 a.m.

This panel discussion is cosponsored by the Association of Women in Mathematics; see the description of Part I of this presentation on Wednesday at 3:20 p.m. under AWM's listing of events.

BUSINESS MEETING

Saturday, 10:00 a.m. – 10:50 a.m.

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.

Young Mathematicians Network (YMN)

CONCERNS OF YOUNG MATHEMATICIANS: A TOWN MEETING

Organized by David Kung, St. Mary's College of Maryland
Wednesday, 7:15 p.m. – 8:15 p.m.

This panel discussion will focus on the current primary concerns of young mathematicians, from undergraduates to newly tenured professors, with emphasis on audience participation.

Also see details about the poster session (Thursday at 2:00 p.m.) and panel discussions (Wednesday at 2:15 p.m. and 3:35 p.m.) cosponsored by YMN under the "MAA Sessions" section.

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 Pavel Pevzner, University of California San Diego, *Transforming men into mice (and into chimpanzees, dogs, chickens, etc.)* at 11:10 a.m. on Thursday. Minisymposia and the organizers are listed below.

UNDERGRADUATE LINEAR ALGEBRA AND DIFFERENTIAL EQUATIONS: PROJECTS, PROBLEMS, AND ISSUES

William Briggs, University of Colorado at Denver

DISCONTINUOUS GALERKIN METHODS

Paul Castillo, University of Puerto Rico

ERROR-CORRECTING CODES

Vera Pless, University of Illinois at Chicago

See also the Special Sessions jointly sponsored by SIAM in the "AMS Special Sessions" section.

Ancillary CONFERENCES

AMERICAN STATISTICAL ASSOCIATION (ASA)

A one-day course will be offered January 4 preceding the Joint Mathematics Meetings in Atlanta. 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.

Others

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. There will be several presentations on the exhibit hall floor throughout the meeting.

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.

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 27. 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.*

RECEPTION FOR FIRST-TIME PARTICIPANTS

Wednesday, 5:00 p.m. – 6:00 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.

GRADUATE STUDENT RECEPTION

Organized by **Betty Mayfield, Hood College, and Shawnee McMurran, California State University, San Bernardino**
Wednesday, 6:00 p.m. – 7:00 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.

Participants are warmly invited to attend this open house sponsored by several of the mathematical institutes in North America.

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.

MAA TWO-YEAR COLLEGE RECEPTION

Thursday, 5:45 p.m. – 7:00 p.m.

This is open to all meeting participants, particularly two-year faculty members. This is a great opportunity to meet old friends

and make some new ones. There will be hot and cold refreshments and a cash bar. Sponsored by Addison-Wesley Longman.

LEHIGH UNIVERSITY RECEPTION

Thursday, 5:45 p.m. – 7:00 p.m.

All friends and graduates of the Lehigh Math Program are invited to attend.

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. Meet some new friends or get together with some old friends. Please join us!

UNIVERSITY OF CHICAGO DEPARTMENT OF MATHEMATICS ALUMNI RECEPTION

Thursday, 6:00 p.m. – 8:00 p.m.

MER BANQUET

Thursday 6:30 p.m. – 9:30 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.

JOINT PME AND MAA STUDENT CHAPTER ADVISORS' BREAKFAST

Friday, 7:00 a.m. – 8:00 a.m.

RECEPTION FOR MATHEMATICIANS IN BUSINESS, INDUSTRY, AND GOVERNMENT

Organized by **Michael Monticino, University of North Texas**
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.

NEW MEXICO STATE UNIVERSITY MATHEMATICS ASSOCIATION RECEPTION

Friday, 5:30 p.m. – 7:00 p.m.

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

NAM BANQUET

Friday, 5:30 p.m. – 9:00 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 \$48 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.

BUDAPEST SEMESTERS IN MATHEMATICS (BSM) REUNION

Friday, 6:30 p.m. – 8:30 p.m.

All BSM alums are invited to attend. Please stop by the BSM booth in the exhibit area for more details.

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.

NOTICES TENTH ANNIVERSARY RECEPTION

Saturday, 5:00 p.m. – 6:00 p.m.

All meeting participants are invited to join *Notices* Editorial Board members and AMS staff for a reception in honor of the tenth anniversary of the *Notices* transition into its present magazine-style format and wider-ranging expository content. Refreshments will be served.

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.

AMS Information BOOTH

All meeting participants are invited to visit the AMS Information Booth during the meeting. Complimentary coffee and tea will be served. A special gift will be available for participants, compliments of the AMS. AMS staff will be at the booth to answer questions about AMS programs and membership.

Book Sales and EXHIBITS

All participants are encouraged to visit the book, education media, and software exhibits from 12:15 p.m. 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

Mathematical 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. 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 5 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, advance registrants from Canada must 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 Atlanta. 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 meetregrequest@ams.org or by visiting http://www.ams.org/amsmtgs/2091_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. All advance registrants will receive acknowledgment of payment prior to the meetings.

INTERNET ADVANCE REGISTRATION

Go to http://www.ams.org/amsmtgs/2091_reghsg.html to register online for advanced registration and housing arrangements. 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 December 31 (the deadline for refunds for banquet tickets is December 27) will receive a 50% refund of fees paid. No refunds will be issued after this date.

FULL-TIME STUDENTS

Those 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, 2005, 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 in 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.

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 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 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

JOINT MATHEMATICS MEETINGS REGISTRATION FEES

	<i>by Dec. 10</i>	<i>at meeting</i>
Member of AMS, ASL, Canadian Mathematical Society, MAA, SIAM	\$199	\$259
Emeritus Member of AMS, MAA; Graduate Student; Unemployed; Librarian; High School Teacher; Developing Countries Special Rate	\$39	\$49
Undergraduate Student	\$21	\$27
Temporarily Employed	\$158	\$181
Nonmember	\$308	\$401
High School Student	\$2	\$5
Nonmathematician Guest	\$10	\$10
One-Day Nonmember	n/a	\$220
One-Day Member of AMS, ASL, CMS, MAA, SIAM	n/a	\$142
MAA Minicourses Minicourses # 1-6 (computers)	\$95	\$95*
Minicourses # 7-12, 14-16	\$60	\$60*
Minicourses # 13	\$70	\$70*
*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	\$85	\$115
Nonmember	\$108	\$140
Student/Unemployed/Emeritus	\$37	\$55
Employment Center		
Employer (first table computer or self-scheduled)	\$225	\$305
Employer (each additional table, computer or self-scheduled)	\$75	\$105
Employer Posting Fee	\$50	N/A
Applicants (all services)	\$42	\$80
Applicants (Winter List & message center only)	\$21	\$21

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; include the number 983 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 deadline has its own advantages and benefits.

EMPLOYMENT CENTER

Advance registration (inclusion in the *Winter Lists*):

October 25

EARLY MEETINGS ADVANCE REGISTRATION
(room lottery)

October 29

ORDINARY MEETINGS ADVANCE REGISTRATION
(hotel reservations, materials mailed):

November 5

FINAL MEETINGS ADVANCE REGISTRATION
(advance registration, Short Courses, Employment Center,
MAA Minicourses, banquets):

December 10

EMPLOYMENT CENTER ADVANCE REGISTRATION:

Applicant and employer forms must be received by October 25 in order to appear in the publications distributed to all participants. For detailed information on the Employment Center, see the complete article at www.ams.org/emp-reg/.

Early Advance Registration: Those who register by the **early** deadline of October 29 will be included in a random drawing to select winners of complimentary hotel rooms in Atlanta. 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 17. So register early! (See the list of the winners in Atlanta.) Also, applicant and employer forms must be received by October 25 in order to be reproduced in the *Winter Lists* for the Employment Center.

Ordinary Advance Registration: Those who register after October 29 and by the **ordinary** deadline of November 5 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. In appreciation for using our housing service (MMSB), we are holding a lottery for anyone who books a hotel room through us by November 5. The winner will receive a new HP Graphing Calculator.

Final Advance Registration: Those who register after November 5 and by the **final** deadline of December 10 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 10 deadline is firm**; any forms received after that date will be returned and full refunds issued. Please come to the registration desk in the lobby area of the Grand Hall on the exhibit level of the Hyatt Regency Atlanta.

HOTEL RESERVATIONS

The 2005 Joint Mathematics Meetings will be held in Atlanta, GA from January 5-8, 2005. The Hyatt Regency Atlanta and the Atlanta Marriott Marquis will serve as co-headquarters. Scientific sessions will be held in both hotels; invited addresses, registration, and the exhibits will be in the Hyatt Regency Atlanta.

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 instructions on the following hotel pages. 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 15. 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/amsmtgs/2091_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 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.

Miscellaneous Information

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 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 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

The Mathematical Association of America and the American Mathematical Society will be offering childcare services for the Atlanta Joint Mathematics Meetings to registered participants.

The child care will be offered through KiddieCorp Children's Program. KiddieCorp is an organization that has been providing high quality programs for children of all ages at meetings throughout the United States and Canada since 1986. Read all about them at <http://www.kiddiecorp.com/>.

The childcare services provided at the JMM are for children ages 6 months through 12 years old. Space per day will be limited and is on a space available basis. The dates and times for the program are January 5- 8, 2005, 8:00 a.m. to 5:00 p.m. each day. It will be located at the Hyatt Regency Atlanta in Atlanta, GA. Parents are encouraged to bring snacks and beverages for their children but items such as juice boxes, cheerios, and crackers will be provided. KiddieCorp can arrange meals for children at cost plus 15% or parents can be responsible for meals for their children.

Registration starts in September. The registration fee is \$25 per family (nonrefundable). Additional cost will be \$8 per hour per child or \$6 per hour per child for graduate students. These reduced child care rates are made possible to the meeting participant by the Mathematical Association of America and the American Mathematical Society. Parents must be registered for the JMM to participate. Full payment is due at the time of registration with KiddieCorp. Deadline for registering is December 8, 2004.

If parents do not pick up their children at the time scheduled or by the end of the day (no later than 5:00 pm), they will be charged a late fee of \$5.00 per child for every 15 minutes thereafter.

Cancellations must be made to KiddieCorp prior to December 8, 2004 for a full refund. Cancellations made after that date will be subject to a 50% cancellation fee. Once the program has begun, no refunds will be issued.

This program is being offered on an experimental basis for the 2005 Atlanta meetings. Its reception at this meeting will help determine the possibility of future programs.

To register, go to <https://www.kiddiecorp.com/jmmkids.htm> or call KiddieCorp at (858) 455-1718 to request a form.

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 the Joint Mathematics Meetings.

LOCAL INFORMATION

See <http://www.atlanta.net/visitors/index.asp> 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.

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, résumés) 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 5 through 8 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 and daily newsletter.

DISCOUNTED AIR TRAVEL

Atlanta is on Eastern Standard Time. Hartsfield Atlanta International Airport (ATL) is located about twelve miles south of the Atlanta metropolitan area and is served by all major airlines.

The official airline for the meetings is Delta, which uses Atlanta as its major hub. 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 December 30, 2004-January 11, 2005. Other restrictions/discounts may apply, and seats are limited.

Delta is offering

- The most deeply discounted online fares are available through the meetings home page at http://www.ams.org/amsmtgs/2091_intro.html. Click on the Delta icon on the bottom right of the page. Once you select your itinerary, click on "negotiated rate" to see if your flight qualifies for an extra meeting discount.
- A 5% discount off published round-trip fares within the continental U.S. excluding A, D, I, U, and T, classes of service.
- A 10% discount off Delta's domestic published unrestricted round-trip coach fares (Y06/YR06) rates. No advance reservations or ticketing is required.
- An additional 5% bonus discount if you purchase your ticket 60 days or more prior to your departure through Meeting Network Reservations (800-241-6760, 8:00 a.m. to 11:00 p.m. Eastern Standard Time, Monday through Sunday; cite File #205778A) or your travel agent. This discount is not available for online purchases.

Ground Transportation from the Airport: MARTA offers rail service directly from the airport to Peachtree Center, very close to both the Hyatt and Marriott hotels for \$1.75 each way, from 5:00 a.m. until 1:00 a.m. Mondays through Fridays, and 6:00 a.m. until 12:20 a.m. weekends and holidays. Trains run every 10 minutes on weekdays and every 15 minutes on weekends and holidays. The trip takes about 15 minutes. Call 404-848-4711 for personalized help from MARTA to plan your route.

Taxis are available outside the baggage claim area. The approximate fare is \$25 to downtown for one person (\$13 each for two people).

The Atlanta Link (shuttle service) offers airport-to-door service. Vans usually depart every 15 minutes from 6:00 a.m. to midnight. The fare to downtown is \$16 one way or \$28 round trip. Reservations are not necessary for the downtown area. For details or more information, call 404-524-3400.

Driving directions to the Marriott and Hyatt: From the South (airport): Go north on I-85 about twelve miles. Take the International Blvd. exit (248C) to Peachtree Center Ave. Turn right and go two blocks; the main Marriott entrance is on the right and the Hyatt motor lobby entrance is on the left.

From the North: Take I75/85 south. Take the Courtland St./ Georgia State University exit (249A). Take a right onto International Blvd. and turn right again onto Peachtree Center Ave. Follow as above.

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 December 29, 2004 – January 15, 2005:

Car Type	Daily	Weekly	Weekend/Daily
Subcompact	\$46.00	\$194.00	\$26.00
Compact	\$47.00	\$204.00	\$27.00
Intermediate	\$49.00	\$216.00	\$29.00
Full-Size 2-Door	\$51.00	\$237.00	\$36.00
Full-Size 4-Door	\$53.00	\$237.00	\$36.00
Premium	\$58.00	\$247.00	\$38.00
Luxury	\$71.00	\$309.00	\$72.00
Minivan	\$71.00	\$309.00	\$72.00
Convertible	\$71.00	\$309.00	\$72.00
Sport Utility	\$71.00	\$309.00	\$72.00

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 <http://www.avis.com>.

Schedule of Events

MONDAY JANUARY 3, 2005

- 9:00 a.m.- 5:00 p.m. MAA Short Course
Eight Lectures on Random Graphs, I
- 9:00 a.m.- 5:00 p.m. AMS Short Course
Radon Transform and Applications to Inverse Problems, I

TUESDAY JANUARY 4, 2005

- 8:30 a.m.- 4:00 p.m. MAA Board of Governors
- 9:00 a.m.- 5:00 p.m. MAA Short Course
Eight Lectures on Random Graphs, II
- 9:00 a.m.- 5:00 p.m. AMS Short Course
Radon Transform and Applications to Inverse Problems, II
- 1:30 p.m.-10:00 p.m. AMS Council Meeting
- 3:00 p.m.- 8:00 p.m. Joint Meetings Registration

WEDNESDAY JANUARY 5, 2005

- 7:30 a.m.- 4:00 p.m. Joint Meetings Registration
- 7:30 a.m.- 4:00 p.m. Employment Center Registration
- 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-SIAM Special Session
Dynamic Equations on Time Scales; Integer Sequences and Rational Maps, I
- 8:00 a.m.-10:50 a.m. AMS-SIAM Special Session
Mathematical Image Processing, I
- 8:00 a.m.-10:50 a.m. AMS-SIAM Special Session
Theoretical and Computational Aspects of Inverse Problems, I
- 8:00 a.m.-10:50 a.m. AMS-ASL Special Session
Reverse Mathematics, I

AMS SPECIAL SESSIONS

- 8:00 a.m.-10:50 a.m. Dynamic Equations on Time Scales: Integer Sequences and Rational Maps
- 8:00 a.m.-10:50 a.m. Riemannian Geometry, I
- 8:00 a.m.-10:50 a.m. D-Modules, I
- 8:00 a.m.-10:50 a.m. Commutative Algebra, I
- 8:00 a.m.-10:50 a.m. Design Theory and Graph Theory, I
- 8:00 a.m.-10:50 a.m. Analysis Problems in Modern Physics, I
- 8:00 a.m.-10:50 a.m. In the Wake of Jacobi and Hamilton 200 Years Later, I
- 8:00 a.m.-10:50 a.m. Radon Transform and Inverse Problems, I
- 8:00 a.m.-10:55 a.m. AMS Contributed Papers Session

MAA CONTRIBUTED PAPER SESSIONS

- 8:00 a.m.-10:55 a.m. Getting Students to Discuss and to Write About Mathematics, I

- 8:00 a.m.-10:55 a.m. My Favorite Demo: Innovative Strategies for Mathematics Instructors, I
- 8:00 a.m.- 10:55 a.m. Courses Below Calculus: A New Focus, I
- 8:00 a.m.- 10:55 a.m. Mathematics and Sports, I
- 8:00 a.m.- 10:55 a.m. General Contributed Paper Session, I
- 8:00 a.m.- 10:55 a.m. SIAM Minisymposium
Error Correcting Codes
- 8:30 a.m.- 10:55 a.m. MAA Committee on Graduate Students
Special Presentation: Training T.A.'s in Departments and at Section Meetings
- 9:00 a.m.-11:00 a.m. MAA Minicourse #12: Part A
Getting Students Involved in Undergraduate Research
- 9:00 a.m.-11:00 a.m. MAA Minicourse #1: Part A
Visual Linear Algebra
- 9:00 a.m.-11:00 a.m. MAA Minicourse #7: Part A
Developing Your Department's Assessment Plan
- 9:00 a.m.- 5:00 p.m. Student Hospitality Center
- 9:30 a.m.-10:50 a.m. MAA Special Presentation
Doctoral Programs in Mathematics Education: Their Nature and How to Find Them
- 9:30 a.m.-10:50 a.m. MAA Special Presentation
A Problem-Based Core Program
- 10:05 a.m.-10:55 a.m. AMS Invited Address
Bruce A. Kleiner
Title to be Announced
- 11:10 a.m.-12:00 p.m. MAA-AMS Invited Address
Andrea L. Bertozzi
Processing Images Using Nonlinear PDEs.
- 12:15 p.m.- 5:30 p.m. Exhibits and Book Sales
- 1:00 p.m.-1:50 p.m. AMS Colloquium Lectures: Lecture I
Robert K. Lazarsfeld
How Polynomials Vanish: Singularities, Integrals, and Ideals (Part I)
- 2:15 p.m.- 3:05 p.m. MAA INVITED ADDRESS
Fernando Q. Gouvêa
What Are p-adic Numbers and What Are They For?
- 2:15 p.m.- 3:35 p.m. SIGMAA on Rume Guidelines Committee
Panel Discussion
Ph.D. Programs in Research in Undergraduate Mathematics
- 2:15 p.m.- 3:35 p.m. MAA Young Mathematicians' Network
Panel Discussion
Career Paths for Undergraduates in Mathematics
- 2:15 p.m.- 3:45 p.m. MAA Project NEXt Panel Discussion
Developing Undergraduate Research Projects That Are Not in Discrete Mathematics

- 2:15 p.m.- 4:15 p.m. MAA Minicourse #13: Part A
Origami in Undergraduate
Mathematics Courses
- 2:15 p.m.- 4:15 p.m. MAA Minicourse #2: Part A
Teaching a Galois Theory
for Undergraduates
- 2:15 p.m.- 4:15 p.m. MAA Minicourse #8: Part A
Mathematical Finance
- 2:15 p.m.- 5:55 p.m. AMS Session Contributed Papers

MAA CONTRIBUTED PAPER SESSIONS

- 2:15 p.m.- 6:00 p.m. Mathematics in the Islamic World
- 2:15 p.m.- 6:00 p.m. Mathlets for Teaching and
Learning Mathematics
- 2:15 p.m.- 6:00 p.m. Drawing on Our Students' Thinking to Improve
the Mathematical Education of Teachers
- 2:15 p.m.- 6:00 p.m. General Contributed Paper Session, II
- 2:15 p.m.- 6:00 p.m. SIAM Minisymposium
Undergraduate Linear Algebra and Differential
Equations: Projects, Problems, and Issues
- 2:15 p.m.- 6:00 p.m. SIAM Minisymposium
Discontinuous Galerkin Methods: Theory
and Applications
- 2:15 p.m.- 6:05 p.m. MAA-AMS-MER Special Session
Mathematics and Education Reform, II
- 2:15 p.m.- 6:05 p.m. AMS-SIAM Special Session
Dynamic Equations on Time Scales; Integer
Sequences and Rational Maps, II
- 2:15 p.m.- 6:05 p.m. AMS-SIAM Special Session
Mathematical Imaging Processing, II
- 2:15 p.m.- 6:05 p.m. AMS-SIAM Special Session
Theoretical and Computational Aspects of
Inverse Problems, II
- 3:20 p.m.- 4:20 p.m. AWM-NAM Panel Discussion
Achieving Diversity in Graduate Programs,
Part I: The Challenge to Retain Women
- 3:30 p.m.- 4:50 p.m. MAA Committee on Graduate Students
Special Presentation
How to Interview for Your First Job
- 3:50 p.m.- 5:10 p.m. MAA-CUPM-CRAFTY Panel Discusssion
Refocused College Algebra: A Basis for
QL Programs
- 3:50 p.m.- 5:10 p.m. MAA Project NExT-Young Mathematicians' Network
Panel Discussion
Dealing With the Two-Body Problem
- 4:00 p.m.- 5:00 p.m. Welcoming Reception for Undergraduate Students
- 4:20 p.m.- 4:50 p.m. AWM Business Meeting
- 4:30 p.m.- 6:30 p.m. MAA Minicourse #14: Part A
Euler
- 4:30 p.m.- 6:30 p.m. MAA Minicourse #3: Part A
Creating Interactive Workbooks Using
MS Excel
- 4:30 p.m.- 6:30 p.m. MAA Minicourse #9: Part A
Infusing Connections into Core Courses for
Future Secondary Teachers
- 4:50 p.m.- 5:30 p.m. AWM Focus Discussion
Focus: Future
- 5:00 p.m.- 6:00 p.m. Reception for First-Time Participants
- 5:30 p.m.- 8:00 p.m. Mathematical Institutes Open House
- 6:00 p.m.- 7:00 p.m. Emmy Noether Lecture Dinner
- 6:00 p.m.- 7:00 p.m. Graduate Student Reception
- 7:15 p.m.- 8:15 p.m. Concerns of Young Mathematicians:
A Town Meeting

AMS SPECIAL SESSIONS

- 2:15 p.m.-6:05 p.m. Dynamic Equations on Time Scales: Integer
Sequences and Rational Maps
- 2:15 p.m.- 6:05 p.m. Riemannian Geometry, II
- 2:15 p.m.- 6:05 p.m. D-Modules, II
- 2:15 p.m.- 6:05 p.m. Commutative Algebra, II
- 2:15 p.m.- 6:05 p.m. Representations of Lie Algebras, I
- 2:15 p.m.- 6:05 p.m. Design Theory and Graph Theory, II
- 2:15 p.m.- 6:05 p.m. Radon Transform and Inverse Problems, II
- 2:15 p.m.- 6:05 p.m. Mathematical Sciences Research for the
Department of Energy's Computational
Biology Needs
- 2:30 p.m.- 5:00 p.m. MAA Section Officers
- 3:20 p.m.- 4:05 p.m. **MAA INVITED ADDRESS**
Ravi D. Vakil
Given Four Lines in Space, How Many Other
- 8:30 p.m.- 9:30 p.m. AMS Josiah Willard Gibbs Lecture
Ingrid Daubechies
The Interplay Between Analysis and Algorithms
- 9:30 p.m.-11:00 p.m. AWM Reception

THURSDAY JANUARY 6, 2004

- 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.-10:00 a.m. MAA Minicourse #4: Part A
Java Applets in Teaching Mathematics
- 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. MAA-AMS Special Session
Tropical Geometry, I
- 8:00 a.m.-11:50 a.m. AMS-SIAM Special Session
Stochastic, Large-Scale, and Hybrid Systems, I

Schedule of Events

THURSDAY JANUARY 6 CONTINUED

- 8:00 a.m.-11:50 a.m. AMS-SIAM Special Session
Dynamic Equations on Time Scales; Integer Sequences and Rational Maps, III
- 8:00 a.m.-11:50 a.m. AMS-SIAM Special Session
Orthogonal Polynomials—Random Matrices—Integrable Systems: Interdisciplinary Aspects, I
- 8:00 a.m.-11:50 a.m. AMS-SIAM Special Session
Theoretical and Computational Aspects of Inverse Problems, III
- 8:00 a.m.-11:50 a.m. AMS-ASL Special Session
Reverse Mathematics, II

AMS SPECIAL SESSIONS

- 8:00 a.m.-11:50 a.m. Mathematical Sciences Contributions to the Biomedical Sciences, I
- 8:00 a.m.-11:50 a.m. Riemannian Geometry, III
- 8:00 a.m.-11:50 a.m. Quantum Topology, I
- 8:00 a.m.-11:50 a.m. Commutative Algebra, III
- 8:00 a.m.-11:50 a.m. Representations of Lie Algebras, II
- 8:00 a.m.-11:50 a.m. Analysis Problems in Modern Physics, II
- 8:00 a.m.-11:50 a.m. Radon Transform and Inverse Problems, III
- 8:00 a.m.-11:55 a.m. AMS Contributed Paper Session

MAA CONTRIBUTED PAPER SESSIONS

- 8:00 a.m.-12:00 p.m. History of Undergraduate Mathematics in America, 1900–2000
- 8:00 a.m.-12:00 p.m. Initializing and Sustaining Undergraduate Research Projects and Programs
- 8:00 a.m.-12:00 p.m. Projects and Demonstrations that Enhance a Differential Equations Course
- 8:00 a.m.-12:00 p.m. Countering "I Can't Do Math": Strategies for Teaching Under-Prepared, Math-Anxious Students
- 8:00 a.m.-12:00 p.m. General Contributed Paper Session, III
- 8:30 a.m.-10:00 p.m. MAA Project NExT Panel Discussion
What Faculty Can Do to Promote Diversity in Mathematics
- 8:30 a.m.-11:30 a.m. MAA Special Presentation
Emerging Technologies in Undergraduate Mathematics
- 9:00 a.m.-9:50 a.m. AWM Emmy Noether Lecture
Lai-Sang Young
From Limit Cycles to Strange Attractors
- 9:00 a.m.-10:20 a.m. MAA Special Presentation
National Science Foundation Programs Supporting Learning and Teaching in the Mathematical Sciences

- 9:00 a.m.-11:00 a.m. MAA Minicourse #10: Part A
Bridging the Gap Between Mathematics and the Physical Sciences
- 9:00 a.m.-11:00 a.m. MAA Minicourse #15: Part A
Conceptests and Peer Instruction: Active Learning in the Calculus Classroom
- 9:00 a.m.- 5:00 p.m. Student Hospitality Center
- 10:00 a.m.-11:00 a.m. AMS Special Presentation
Do the Math!
- 10:00 a.m.-6:00 p.m. Exhibits and Book Sales
- 10:05 a.m.-10:55 a.m. **MAA INVITED ADDRESS**
Erik D. Demaine
Origami, Linkages, and Polyhedra: Folding With Algorithms
- 10:15 a.m.-12:15 p.m. MAA MINICOURSE #5: PART A
Hands-on Discrete Mathematics With Technology
- 10:30 a.m.-12:00 p.m. AMS-ASL Panel Discussion
The Continuum Hypothesis Revisited: New Perspectives
- 10:30 a.m.-12:00 p.m. MAA Project NExT Panel Discussion
Recruiting Students for Mathematics Departments
- 10:45 a.m.-12:05 p.m. MAA Panel Discussion
Using the CUPM Curriculum Guide 2004 to Get Grants to Facilitate Change
- 10:45 a.m.-12:05 p.m. MAA Committee on Articulation and Placement
Panel Discussion
How Changes in High School Mathematics Could Influence Collegiate Mathematics
- 11:10 a.m.-12:00 p.m. SIAM Invited Address
Pavel Pevzner
Transforming Men into Mice (and into chimpanzees, dogs, chickens, etc.)
- 1:00 p.m.-1:50 p.m. AMS Colloquium Lectures: Lecture II
Robert K. Lazarsfeld
How Polynomials Vanish: Singularities, Integrals, and Ideals (Part II)
- 1:00 p.m.-2:20 p.m. MAA Panel Discussion
Using CUPM Curriculum Guide 2004: Assessing and Improving the Program for the Major in Mathematics
- 1:00 p.m.- 2:20 p.m. MAA Special Presentation
Learning to Prove: Strategies to Improve Students' Proof Writing Skills
- 1:00 p.m.- 3:00 p.m. Environmental Mathematics SIGMAA
Invited Address, Council Meeting, and Business Meeting
The featured speaker is Benoit B. Mandelbrot, Yale University
- 1:00 p.m.-3:00 p.m. MAA Minicourse #11: Part A
Fair Enough? Mathematics of Equity

- 1:00 p.m.- 3:00 p.m. MAA Minicourse #16: Part A
Music and Mathematics
- 1:00 p.m.-3:00 p.m. MAA Minicourse #6: Part A
Webwork, An Internet-Based System for
Generating and Delivering Homework
Problems to Students
- 1:00 p.m.- 3:50 p.m. MAA-AMS-MER Special Session
Mathematics and Education Reform, IV
- 1:00 p.m.- 3:50 p.m. MAA-AMS Special Session
Tropical Geometry, II
- 1:00 p.m.- 3:50 p.m. AMS-SIAM Special Session
Stochastic, Large-Scale, and Hybrid Systems, II
- 1:00 p.m.- 3:50 p.m. AMS-SIAM Special Session
Dynamic Equations on Time Scales; Integer
Sequences and Rational Maps, IV
- 1:00 p.m.- 3:50 p.m. AMS-SIAM Special Session
Orthogonal Polynomials—Random
Matrices—Integrable Systems:
Interdisciplinary Aspects, II
- 1:00 p.m.- 3:50 p.m. AMS-SIAM Special Session
Theoretical and Computational Aspects of
Inverse Problems, IV
- 1:00 p.m.- 3:50 p.m. AMS-ASL Special Session
Reverse Mathematics, III

AMS SPECIAL SESSIONS

- 1:00 p.m.- 3:50 p.m. Mathematical Sciences Contributions to the
Biomedical Sciences, II
- 1:00 p.m.- 3:50 p.m. Quantum Topology, II
- 1:00 p.m.- 3:50 p.m. Representations of Lie Algebras, III
- 1:00 p.m.- 3:50 p.m. Analysis Problems in Modern Physics, III
- 1:00 p.m.- 3:50 p.m. In the Wake of Jacobi and Hamilton 200
Years Later, II
- 1:00 p.m.- 3:50 p.m. Radon Transform and Inverse Problems, IV
- 1:00 p.m.- 4:00 p.m. MAA Special Presentation
Undergraduate Mathematics and NSDL: The
National Science Technology Engineering and
Mathematics Education Digital Library

MAA CONTRIBUTED PAPER SESSIONS

- 1:00 p.m.- 4:10 p.m. Getting Students to Discuss and to Write
About Mathematics, II
- 1:00 p.m.- 4:10 p.m. My Favorite Demo: Innovative Strategies for
Mathematics Instructors, II
- 1:00 p.m.- 4:10 p.m. Using Real-World Data to Illustrate
Statistical Concepts, I
- 1:00 p.m.- 4:10 p.m. General Contributed Paper Session, IV
- 1:00 p.m.- 4:10 p.m. AMS Session for Contributed Papers
- 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
- 2:15 p.m.- 3:05 p.m. AMS Invited Address
Eleny Ionel
Embedded Curves and
Gromov-Witten Invariants
- 2:30 p.m.- 3:50 p.m. MAA Panel Discussion
Speaking of Mathematics
- 2:30 p.m.- 3:50 p.m. MAA Panel Discussion
The Senior Seminar or "Capstone" Experience
for Undergraduate Mathematics Majors
- 3:15 p.m.- 4:35 p.m. MAA Panel Discussion
Moore Method Calculus by Those Who Do It
- 3:20 p.m.- 4:10 p.m. AMS Retiring Presidential Address
Avi Wigderson
The Power and Weakness of Randomness
(when you are short on time)
- 4:25 p.m.- 6:30 p.m. MAA-AMS Joint Prize Session and Reception
- 5:45 p.m.- 6:30 p.m. Joint Prize Reception
- 5:45 p.m.- 7:00 p.m. Lehigh University Reception
- 5:45 p.m.- 7:00 p.m. MAA Two-Year College Reception
- 6:00 p.m.- 7:00 p.m. University of Chicago Department of Mathematics
Alumni Reception
- 6:00 p.m.- 8:00 p.m. SIGMAA on the History of Mathematics
Annual Meeting
The Guest Lecturer is Thomas Archibald,
Dibner Institute at MIT and Arcadia University
- 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 7, 2005

- 7:00 a.m.- 8:00 a.m. PME and MAA Student Chapter Advisors' Breakfast
- 7:30 a.m.- 4:00 p.m. Joint Meetings Registration
- 8:00 a.m.-10:50 a.m. AMS-SIAM Special Session
Nonsmooth Analysis in Variational
and Imaging Problems, I
- 8:00 a.m.-10:50 a.m. AMS-SIAM Special Session
Recent Advances in Mathematical Ecology, I
- 8:00 a.m.-10:50 a.m. AMS-SIAM Special Session
Reaction Diffusion Equations
and Applications, I
- 8:00 a.m.-10:50 a.m. AMS-SIAM Special Session
Integrable Systems and Special Functions, I

AMS SPECIAL SESSIONS

- 8:00 a.m.-10:50 a.m. Dynamics of Mapping Class Groups on
Moduli Spaces, I

Schedule of Events

FRIDAY JANUARY 7 CONTINUED

- 8:00 a.m.-10:50 a.m. Inverse Spectral Geometry, I
- 8:00 a.m.-10:50 a.m. Spaces of Vector-Valued Functions, I
- 8:00 a.m.-10:50 a.m. Arithmetic Algebraic Geometry, I
- 8:00 a.m.-10:50 a.m. Algorithmic Algebraic and Analytic Geometry, I
- 8:00 a.m.-10:50 a.m. Modular Representation Theory of Finite and Algebraic Groups, I

MAA CONTRIBUTED PAPER SESSIONS

- 8:00 a.m.-10:55 a.m. Using Real-World Data to Illustrate Statistical Concepts, II
- 8:00 a.m.-10:55 a.m. Environmental Mathematics and the Interdisciplinary
- 8:00 a.m.-10:55 a.m. Teaching Visualization Skills
- 8:00 a.m.-10:55 a.m. Teaching and Assessing Problem Solving
- 8:00 a.m.-10:55 a.m. MAA General Contributed Paper Session, V
- 8:00 a.m.-10:55 a.m. AMS Session for Contributed Papers
- 8:00 a.m.-11:00 a.m. PME Council
- 8:00 a.m.- 5:00 p.m. ASL Invited Addresses and Contributed Papers
- 8:15 a.m.- 7:30 p.m. Employment Center
- 9:00 a.m.- 9:50 a.m. AMS Invited Address
Gunther Uhlmann
Recent Developments in Inverse Problems
- 9:00 a.m.-10:20 a.m. MAA Committee on the Profession Panel Discussion Long-Term Mathematics Faculty Outside of the Tenure Track: Possibilities, Pitfalls, and Practicalities
- 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.- 10:55 a.m. MAA Panel Discussion Using Mathematically Rich Activities to Develop K-12 Curricula, Part I
- 9:00 a.m.-11:00 a.m. MAA Minicourse #12: Part B Getting Students Involved in Undergraduate Research
- 9:00 a.m.-11:00 a.m. MAA Minicourse #1: Part B Visual Linear Algebra
- 9:00 a.m.-11:00 a.m. MAA Minicourse #7: Part B Developing Your Department's Assessment Plan
- 9:00 a.m.-11:00 a.m. MAA Poster Session Special Programs and Strategies to Reach Underrepresented Populations
- 9:00 a.m.- 5:00 p.m. Student Hospitality Center

- 9:30 a.m.-10:55 a.m. AMS Workshop T.A. Development Using Case Studies: A Workshop for Faculty (Part I)
- 9:30 a.m.- 5:30 p.m. Exhibits and Book Sales
- 10:05 a.m.-10:55 a.m. AMS Invited Address
Steven M. Zelditch
Title to be announced
- 11:10 a.m.-12:00 p.m. MAA-AMS Invited Address
Bernd Sturmfels
Algebraic Statistics
- 1:00 p.m.-1:50 p.m. MAA Student Lecture
Robin Wilson
Victorian Combinatorics
- 1:00 p.m.-2:00 p.m. AMS Colloquium Lectures: Lecture III
Robert K. Lazarsfeld
How Polynomials Vanish: Singularities, Integrals, and Ideals (Part III)
- 1:00 p.m.-2:20 p.m. MAA Committee on Articulation and Placement Panel Discussion
The Great Divide: Graphing Calculators in Secondary and College Education
- 1:00 p.m.- 2:20 p.m. MAA-AMS Joint Committee on Teaching Assistants and Part-Time Instructors Panel Discussion
Just the Facts: Profiles and Inferences From Data on Permanently Temporary Faculty
- 1:00 p.m.- 2:30 p.m. MAA Project NExT Panel Discussion
Planning a Sabbatical
- 1:00 p.m.- 2:30 p.m. AMS Workshop T.A. Development Using Case Studies: A Workshop for Faculty (Part 2)
- 1:00 p.m.- 3:00 p.m. MAA Minicourse #16: Part B Music and Mathematics
- 1:00 p.m.- 3:00 p.m. MAA Minicourse #2: Part B Teaching a Galois Theory for Undergraduates
- 1:00 p.m.- 3:00 p.m. MAA Minicourse #8: Part B Mathematical Finance
- 1:00 p.m.- 3:00 p.m. MAA Invited Paper Session
Modeling Problems of the Environment
- 1:00 p.m.- 3:00 p.m. MAA Poster Session on Projects Supported by the NSF Division of Undergraduate Education
- 1:00 p.m.- 5:50 p.m. MAA-AMS-SIAM Special Session Research in Mathematics by Undergraduates, I
- 1:00 p.m.- 5:50 p.m. MAA-AMS Special Session History of Mathematics, I
- 1:00 a.m.- 5:50 p.m. AMS-SIAM Special Session Reaction Diffusion Equations and Applications, II
- 1:00 p.m.- 5:50 p.m. AMS-SIAM Special Session Recent Advances in Mathematical Ecology, II

AMS SPECIAL SESSIONS

- 1:00 p.m.- 5:50 p.m. Mathematicians' Work on Mathematics Education
- 1:00 p.m.- 5:50 p.m. Algebraic Geometry Codes
- 1:00 p.m.- 5:50 p.m. Current Events
- 1:00 p.m.- 5:50 p.m. Mathematics and Mathematics Education in Fiber Arts
- 1:00 p.m.- 5:50 p.m. Spaces of Vector-Valued Functions, II
- 1:00 p.m.- 5:50 p.m. Topics in Geometric Function Theory, I

MAA CONTRIBUTED PAPER SESSIONS

- 1:00 p.m.- 5:50 p.m. Courses Below Calculus: A New Focus, II
- 1:00 p.m.- 5:50 p.m. Mathematics and Sports, II
- 1:00 p.m.- 5:50 p.m. Philosophy of Mathematics
- 1:00 p.m.- 5:50 p.m. Using Handheld Technology to Facilitate Student-Centered Teaching/Learning Activities at the Developmental Algebra Level
- 1:00 p.m.- 5:50 p.m. General Contributed Paper Session, VI
- 1:00 p.m.- 5:55 p.m. AMS Session for Contributed Papers
- 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.- 3:50 p.m. MAA Panel Discussion Classroom Networks for Developing Mathematical Understanding
- 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
- 2:45 p.m.- 4:45 p.m. MAA Special Presentation Information Session on Actuarial Education
- 3:15 p.m.- 5:15 p.m. MAA Minicourse #3: Part B Creating Interactive Workbooks Using MS Excel
- 3:15 p.m.- 5:15 p.m. MAA Minicourse #9: Part B Infusing Connections into Core Courses for Future Secondary Teachers
- 3:15 p.m.- 5:15 p.m. MAA Minicourse #14: Part B Euler
- 4:00 p.m.- 5:00 p.m. WEB SIGMAA Business Meeting
- 4:00 p.m.- 5:20 p.m. SIGMAA for Quantitative Literacy System-wide Quantitative Literacy Initiatives
- 4:00 p.m.- 6:30 p.m. MAA Committee on Undergraduate Student Activities and Chapters Undergraduate (CUSAC) Poster Session Undergraduate Student Poster Session
- 5:00 p.m.- 5:50 p.m. MAA Science Policy-AMS Committee on Science Policy Committee Government Speaker
- 5:00 p.m.- 6:00 p.m. MAA BIG SIGMAA Reception Welcome Reception for Mathematicians in Business, Industry, and Government

- 5:30 p.m.- 7:00 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
- 6:30 p.m.- 8:30 p.m. Budapest Semesters in Mathematics Reunion
- 8:30 p.m.-10:30 p.m. MAA Project NEXt Reception

SATURDAY JANUARY 8, 2005

- 7:30 a.m.-2:00 p.m. Joint Meetings Registration
- 8:00 a.m.-10:50 a.m. MAA-AMS-SIAM Special Session Research in Mathematics by Undergraduates, II
- 8:00 a.m.-10:50 a.m. MAA-AMS Special Session History of Mathematics, II
- 8:00 a.m.-10:50 a.m. AMS-SIAM Special Session Nonsmooth Analysis in Variational and Imaging Problems, II
- 8:00 a.m.-10:50 a.m. AMS-SIAM Special Session Analysis and Applications in Nonlinear Partial Differential Equations, I
- 8:00 a.m.-10:50 a.m. AMS-SIAM Special Session Integrable Systems and Special Functions, II

AMS SPECIAL SESSIONS

- 8:00 a.m.-10:50 a.m. Inverse Spectral Geometry, II
- 8:00 a.m.-10:50 a.m. Complex and Functional Analysis, I
- 8:00 a.m.-10:50 a.m. Topics in Geometric Function Theory, II
- 8:00 a.m.-10:50 a.m. Algorithmic Algebraic and Analytic Geometry, II
- 8:00 a.m.-10:50 a.m. Modular Representation Theory of Finite and Algebraic Groups, II

MAA CONTRIBUTED PAPER SESSIONS

- 8:00 a.m.-10:55 a.m. My Three Favorite Original Calculus Problems
- 8:00 a.m.-10:55 a.m. Meeting the Challenge: Relationship Between Mathematics and Biology in the 21st Century
- 8:00 a.m.-10:55 a.m. Mathematics in Business, Industry, and Government
- 8:00 a.m.-10:55 a.m. General Contributed Paper Session, VII
- 8:00 a.m.-10:55 a.m. AMS Session for Contributed Papers
- 8:00 a.m.- 5:00 p.m. ASL Invited Addresses and Contributed Papers
- 8:30 a.m.- 5:00 p.m. AWM Workshop
- 8:30 a.m.-10:00 a.m. AMS Committee on Education Panel Discussion

MAA INVITED ADDRESS

Georgia Benkart
Square Ice is Very Nice, But Can You Put a Match to It?

Schedule of Events

9:00 a.m.- 9:50 a.m.	NAM/AWM Panel Discussion Achieving Diversity in Graduate Programs, Part II: The Challenge to Retain Underrepresented Groups
9:00 a.m.-10:20 a.m.	MAA/RUME Panel Discussion The ICME-10 Meeting
9:00 a.m.-10:20 a.m.	MAA Panel Discussion Revisiting Crossroads: The Teaching and Learning of Mathematics in Two-Year Colleges
9:00 a.m.-10:55 a.m.	MAA Invited Paper Session Worlds of Interactive Mathematics Part I: The Legacy of Elias Deeba
9:00 a.m.-11:00 a.m.	MAA Minicourse #10: Part B Bridging the Gap Between Mathematics and the Physical Sciences
9:00 a.m.-11:00 a.m.	MAA Minicourse #15: Part B Conceptests and Peer Instruction: Active Learning in the Calculus Classroom
9:00 a.m.-11:00 a.m.	MAA Minicourse #4: Part B Java Applets in Teaching Mathematics
9:00 a.m.-12:00 p.m.	Employment Center
9:00 a.m.-12:00 p.m.	Exhibits and Book Sales
9:00 a.m.- 3:00 p.m.	Student Hospitality Center
10:00 a.m.-10:50 a.m.	NAM Business Meeting
10:05 a.m.-10:50 a.m.	MAA INVITED ADDRESS Steven G. Krantz Symmetry in Complex Analysis
11:10 a.m.-11:40 a.m.	AMS Business Meeting
11:45 a.m.-12:15 p.m.	MAA Business Meeting
1:00 p.m.-1:50 p.m.	NAM Claytor-Woodard Lecture
1:00 p.m.-2:20 p.m.	MAA-CUPM-CRAFTY Panel Discussion Faculty Development for Adjuncts and New Faculty
1:00 p.m.-2:20 p.m.	MAA Special Presentation First-Semester Calculus: Meeting the Needs of Our Students
1:00 p.m.- 3:00 p.m.	MAA Minicourse #5: Part B Hands-on Discrete Mathematics With Technology
1:00 p.m.- 3:00 p.m.	MAA Minicourse #11: Part B Fair Enough? Mathematics of Equity
1:00 p.m.- 3:00 p.m.	MAA Minicourse #13: Part B Origami in Undergraduate Mathematics Courses
1:00 p.m.- 3:00 p.m.	MAA Invited Paper Session Symmetry in Analysis
1:00 p.m.- 3:00 p.m.	MAA Panel Discussion Using Mathematically Rich Activities to Develop K-12 Curricula, Part II

MAA CONTRIBUTED PAPER SESSIONS

1:00 p.m.- 5:30 p.m.	Mathematical Experiences for Students Outside the Classroom
1:00 p.m.- 5:30 p.m.	Research on the Teaching and Learning of Undergraduate Mathematics
1:00 p.m.- 5:30 p.m.	In-Service Training Programs for K-12 Mathematics Teachers
1:00 p.m.- 5:30 p.m.	General Contributed Paper Session, VIII
1:00 p.m.- 5:50 p.m.	AMS-SIAM Special Session Nonsmooth Analysis in Variational and Imaging Problems, III
1:00 p.m.- 5:50 p.m.	AMS-SIAM Special Session Analysis and Applications in Nonlinear Partial Differential Equations, II
1:00 p.m.- 5:50 p.m.	AMS-SIAM Special Session Integrable Systems and Special Functions, III
1:00 p.m.- 5:50 p.m.	MAA-AMS Special Session The History of Mathematics, III
1:00 p.m.- 5:50 p.m.	MAA-AMS-SIAM Special Session Research in Mathematics by Undergraduates, III

AMS SPECIAL SESSIONS

1:00 p.m.-5:50 p.m.	Dynamics of Mapping Class Groups on Moduli Spaces, II
1:00 p.m.- 5:50 p.m.	Inverse Spectral Geometry, III
1:00 p.m.-5:50 p.m.	Complex and Functional Analysis, II
1:00 p.m.- 5:50 p.m.	Arithmetic Algebraic Geometry, II
1:00 p.m.- 5:50 p.m.	Algorithmic Algebraic and Analytic Geometry, III
1:00 p.m.- 5:50 p.m.	Modular Representation Theory of Finite and Algebraic Groups, III
1:00 p.m.- 5:55 p.m.	AMS Session for Contributed Papers
2:30 p.m.- 3:50 p.m.	MAA Committee on Mathematics and the Environment Panel Discussion Mathematical Outreach and the Environment
2:30 p.m.- 3:50 p.m.	MAA CUPM Subcommittee on Curriculum Renewal Across the First Two Years (CRAFTY) Panel Discussion Open Discussion on Refocusing the Courses Before Calculus
3:15 p.m.- 5:10 p.m.	MAA Invited Paper Session Worlds of Interactive Mathematics Part II: The Legacy of James E. White
3:15 p.m.- 5:15 p.m.	MAA Minicourse #6: Part B Webwork, an Internet-Based System for Generating and Delivering Homework Problems to Students
5:00 p.m.- 6:00 p.m.	Notices Tenth Anniversary Reception
6:30 p.m.- 7:30 p.m.	AMS Banquet Reception
7:30 p.m.-10:30 p.m.	AMS Banquet



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