Contents

FOCUS

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Letters to the editor should be addressed to Fernando Gouvêa, Colby College, Dept. of Mathematics, Waterville, ME 04901, or by email to fqgouvea@colby.edu.

Subscription and membership questions should be directed to the MAA Customer Service Center, 800-331-1622; e-mail: maahq@maa.org; (301) 617-7800 (outside U.S. and Canada); fax: (301) 206-9789.

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On the cover: Old Main, located on the campus of the University of Colorado, Boulder, houses administrative offices and a heritage center. Photo courtesy: University of Colorado, Boulder.

Invited ADDRESSES

Several Invited Addresses are offered during MathFest. Each speaker is chosen for their expertise in their field. Besides pure and applied mathematics, topics normally include mathematics education and the history of mathematics.

HEDRICK LECTURE SERIES

Rational Points on Modular Elliptic Curves

Henri Rene Darmon
McGill University

Henri Darmon

Lecture 1: Elliptic Curves

Thursday, July 31

9:30 am – 10:20 am

Elliptic curves arise when considering some of the most classical questions of number theory. Some instances, such as the congruent number problem, date back to the early Greeks, and specific cases of elliptic curve equations were also considered by Fermat in studying his famous "Last Theorem" for exponents 3 and 4. The question of finding an algorithm for solving all elliptic curve equations—intimately connected to the celebrated Birch and Swinnerton-Dyer conjecture—has remained at the forefront of number theory since the time of Fermat. It is now, along with the Riemann hypothesis and the Poincaré conjecture, among the Clay Institute "millenium prize problems."

Lecture 2: Modular Forms

Friday, August 1

9:30 am – 10:20 am

The work of Wiles, as extended and completed by Breuil, Conrad, Diamond and Taylor, shows that all elliptic curves over Q are *modular*. This result caused a sensation when it was announced because it implies Fermat's Last Theorem. Equally exciting are its numerous applications to the theory of elliptic curves. For instance, when combined with the classical theory of *complex multiplication*, modularity allows the construction, by analytic means, of a plentiful and well-behaved supply of algebraic solutions to elliptic curve equations. The study of this rich arithmetic structure, initiated by the German mathematician Kurt Heegner and taken up by Bryan Birch in the late 70's and early 80's, is the basis for much of the progress on the Birch and Swinnerton-Dyer conjecture that has been made in the last 20 years, primarily through the seminal works of Gross-Zagier and Kolyvagin.

Lecture 3: Complex Multiplication and Beyond

Saturday, August 2

9:30 am – 10:20 am

The "Heegner points" arising from the theory of complex multiplication give rise to a rich arithmetic structure which forms the basis for the work of Gross-Zagier and Kolyvagin on the Birch and Swinnerton-Dyer conjecture. I will report on some (largely experimental) work undertaken in the last few years in collaboration with Bertolini, Green, and Logan, supporting the belief that the theory of Heegner points is but a special case of an emerging, and for the time being almost entirely conjectural, picture allowing the construction of algebraic points on elliptic curves from periods of associated modular forms. This has led to computer calculations of algebraic points on elliptic curves which, tantalizingly, cannot be justified theoretically. Beneath these calculations should lie a theory whose discovery would shed new light on the Birch and Swinnerton-Dyer conjecture.

MAA-NAM DAVID BLACKWELL LECTURE

Cars, Faces, and Flowers 22.5 Degrees of Separation, What Can Matrix Factorization Tell You?

James H. Curry, University of Colorado
Thursday, July 31
8:30 am – 9:20 am

James H. Curry

Matrix factorization has a long history and has lead to significant applications. The most recognized factorization method may be the LU decomposition that is a topic in many beginning numerical analysis courses. In this talk I will discuss a recent factorization, Non- Negative Matrix Factorization (NMF), that may have application to feature extraction.

MAA INVITED ADDRESS

Computational Problems in Inferring Large Evolutionary Trees

Tandy J. Warnow, University of Texas at Austin
Thursday, July 31
10:30 am – 11:20 am

Tandy J. Warnow

Evolutionary tree reconstruction is a fundamental part of much biological research, with applications in drug design, human migrations, gene function prediction, etc. From a computational perspective, however, inferring large evolutionary trees (on more than about 100 sequences) is enormously difficult: the favored approaches involve attempts to solve NP-hard optimization problems, and standard methods have poor performance under realistic conditions involving large datasets. In this talk, I will present a survey of the basic optimization problems in the area, discuss some current approaches that seem promising for reconstructing large trees, and present open problems. The talk should be accessible to graduate students; no background in biology is required.

MAA INVITED ADDRESS

Proofs That Really Count

Jennifer J. Quinn
Occidental College
Friday, August 1

8:30 am – 9:20 am


Jennifer J. Quinn

Every proof in this talk reduces to a counting problem — typically enumerated in two different ways. Counting leads to beautiful, often elementary, and very concrete proofs. While not necessarily the simplest approach, it offers another method to gain understanding of mathematical truths. To a combinatorialist, this kind of proof is the only right one. I have selected some favorite identities using Fibonacci numbers, binomial coefficients, Stirling numbers, and more. Hopefully when you encounter identities in the future, the first question to pop into your mind will not be "Why is this true?" but "What does this count?"

JAMES R.C. LEITZEL LECTURE

Mathematics' Response to Issues in Higher Education

Joan R. Leitzel, University of New Hampshire (Retired)
Friday, August 1

10:30 am – 11:20 am


Joan R. Leitzel

Some of the most difficult issues that will confront higher education over the next decade and the unique roles that mathematics departments, mathematicians, and mathematics educators will need to play in addressing those issues on behalf of their institutions will be discussed from the perspective of an emerita university president. How mathematics departments can succeed in this environment, some of the areas where our profession has had considerable success over the last 10-15 years, what we have learned along the way, and what requires further serious attention will be highlighted.

PI MU EPSILON J. SUTHERLAND FRAME LECTURE

Chaos Games and Fractal Images

Robert L. Devaney, Boston University
Friday, August 1

8:00 pm – 8:50 pm


Robert L. Devaney

In this lecture we will describe some of the beautiful images that arise from the "Chaos Game." We will show how the simple steps of this game produce, when iterated millions of times, the intricate images known as fractals. We will describe some of the applications of this technique used in data compression as well as in Hollywood. We will also challenge students present to "Beat the Professor" at the chaos game and maybe win his computer.

AWM-MAA INVITED ADDRESS

What I Learned in Forty Years in Beverly Hills 90210

Katherine P. Layton, Beverly Hills High School
Saturday, August 2

8:30 am – 9:20 am


Katherine P. Layton

Reflections by a high school mathematics teacher on the changes in mathematics education over the years 1960-2000.

MAA INVITED ADDRESS

Geometry of Departmental Discussions

Donald G. Saari, University of California at Irvine
Saturday, August 2

10:30 am – 11:20 am


Donald G. Saari

A frustrating aspect of departmental discussions is that no matter how well prepared a proposal may be, almost always a majority will want to "improve it." Why? When described in simple geometric terms the explanation becomes clear while displaying mathematical phenomena ranging from game theoretic concepts, geometric symmetries, to even singularity theory.

MAA STUDENT LECTURE

The Art of Mental Calculation

Arthur T. Benjamin
Harvey Mudd College
Saturday, August 2

4:00 pm – 4:50 pm


Arthur T. Benjamin

Art Benjamin will demonstrate and explain how to perform rapid mental calculations.

Invited PAPER SESSIONS

Invited Paper Sessions are focused on a particular topic normally in pure or applied mathematics. The speakers, chosen by the organizers, are invited for their expertise on the subject.

INVITED PAPER SESSION ON MODELING THE ENVIRONMENT

Ben Fusaro, Florida State University
Marty Walter, University of Colorado
Thursday, July 31
1:00 pm – 3:00 pm

This session, sponsored by the Environmental Mathematics SIGMAA, will include a variety of talks on mathematics and the environment. The program will feature the following presentations: Albert Bartlett, University of Colorado, "Arithmetic, Population, and Energy"; Robert Cole, Evergreen State University, "Modeling with Stella Software"; and Rollie Lamberson, Humboldt State University, "Managing Endangered Species."

INVITED PAPER SESSION ON MATHEMATICS AND THE VISUAL ARTS

Ralph A. Czerwinski, Millikin University
Friday, August 1
3:15 pm – 5:15 pm

This session will explore connections between mathematics and the visual arts. Both disciplines involve truth and beauty. They also both involve creative processes that lead to deeper understanding. Mathematicians and artists who work with the visual arts will explain and illustrate ways of defining the aesthetics of mathematics, ways that artists use mathematics for inspiration and content, ways that artists use mathematical concepts as a basis or building block in their creative process, and ways of finding form and structure in dynamical systems. The presenters will also explain and illustrate how mathematicians use art to communicate mathematics and how artists and mathematicians face and solve similar problems. Speakers include Michael Field, University of Houston; George W. Hart, SUNY at Stony Brook; Clifford Singer, The Cooper Union; and Carla Farsi, University of Colorado.

MAA SESSIONS

MAA Sessions feature presentations and panel discussions. The speakers are selected and invited by the organizers because of their expertise and accomplishments in the focal area of the session.

SUMMA SPECIAL PRESENTATION

William A. Hawkins, Jr., MAA and the University of the District of Columbia
Thursday, July 31, 1:00 pm – 2:20 pm

Panelists will discuss programs for pre-college students. The panel will be moderated by William A. Hawkins, Jr., director of the SUMMA Program (Strengthening Minority Participation in Mathematics Achievement). He is sponsored by the MAA and SUMMA There will plenty of time for discussion.

AWARDS SESSION

Friday, August 1, 11:30 am – Noon

CONVERSATIONS ON MATHEMATICS AND THE ENVIRONMENT

Marty Walter, University of Colorado
Ben Fusaro, Florida State University
Friday, August 1, 1:00 pm – 2:20 pm

Several authors or editors, including Roger Pielke Jr. of the Center for Science and Technology Policy Research, will present perspectives on the interaction between mathematics and the environment. This will be followed by an informal, audience-led discussion. Most of the time will be reserved for everyone to share how these two fields can support each other. The session, co-sponsored by the Environmental Mathematics SIGMAA and the MAA Committee on Mathematics and the Environment, will be moderated by Patricia Clark Kenschaft, Montclair State University.

NCATE AND THE MATHEMATICS COMMUNITY

Judith Covington, LSU Shreveport
Marilyn Hala, NCTM
Friday, August 1, 1:00 pm – 2:20 pm

The purpose of this session is to get feedback from the mathematics community on the proposed new mathematics guidelines for NCATE (National Council for Accreditation of Teacher Education) accreditation. Someone will be present to discuss the new changes and to get feedback from the audience. The panel is sponsored by the MAA Committee on the Mathematics Education of Teachers (COMET) and NCTM.

WEBWORK: A WEB BASED HOMEWORK SYSTEM

Michael G. Gage, University of Rochester
Arnold K. Pizer, University of Rochester
Vicki Roth, University of Rochester
Friday, August 1, 2:30 pm – 5:00 pm

WeBWorK is a program that allows students to do their mathematical homework over the web. It is currently being used by over 50 colleges, universities and high schools in the US in courses such as college algebra, pre-calculus to vector calculus, differential equations, and statistics. The purpose of this session is to bring together instructors who are currently using or thinking about using WeBWorK. The session will have three major themes. First there will be an introduction to WeBWorK for those unfamiliar with the system. Second, assessment issues (e.g. "does WeBWorK improve learning?") will be addressed. Third, more general topics such as (1) the status of the Rochester mod_perl version ("WeBWorK 2"), (2) setting up a national library of WeBWorK problems and coordinating the various groups around the country that are writing WeBWorK problems and code, and (3) innovative educational uses of WeBWorK will be discussed. Further information on WeBWorK and this session can be found online at http://webwork.math.rochester.edu.

A WORKSHOP ON STUDENT WRITING – A HANDS ON APPROACH

Janet Andersen, Hope College
Annalisa Crannell, Franklin and Marshall College
Mary Ellen Foley, Louisiana State University at Shreveport
Thomas C. Ratliff, Wheaton College
Saturday, August 2, 1:00 pm – 2:20 pm

This session will introduce and elaborate on the main points of employing writing assignments in mathematics classes. These points include creating appropriate assignments, effectively communicating instructors' expectations, and assessing students' work. The audience will have an opportunity to practice these ideas with sample assignments and student papers. The session is sponsored by the MAA Committee on the Teaching of Undergraduate Mathematics (CTUM).

BUSINESS MEETING

Saturday, August 2, 11:30 am – Noon

WHAT'S NEW IN COLLEGE ALGEBRA AND PRECALCULUS COURSES?

Sheldon P. Gordon, SUNY at Farmingdale
Saturday, August 2, 1:00 pm – 2:20 pm

Many changes are taking place in courses below calculus in response to the changing needs of the client disciplines, to chang-

ing needs in mathematics, and to efforts to improve the mathematical experiences of the students. One of the new emphases in these courses is a focus on conceptual understanding as being at least as important as developing of algebraic skills. Another growing emphasis is on mathematical modeling and solving realistic problems to connect mathematics to other fields. Other changing emphases in these courses include the introduction of new mathematical topics such as data analysis and recursion. The panel will discuss the reason for these changes and give examples that illustrate the nature of the courses that result. Panelists include William Fox, Francis Marion University; Joseph Fiedler, California State University at Bakersfield; Deborah Hughes Hallett, University of Arizona; and Allan Rossman, California State Polytechnic University at San Luis Obispo. The session is sponsored by MAA Task Force on the First College Level Mathematics Course and the MAA Committee on Curriculum Renewal Across the First Two Years (CRAFTY).

BUILDING MATHEMATICS EDUCATION IN A DEPARTMENT OF MATHEMATICS

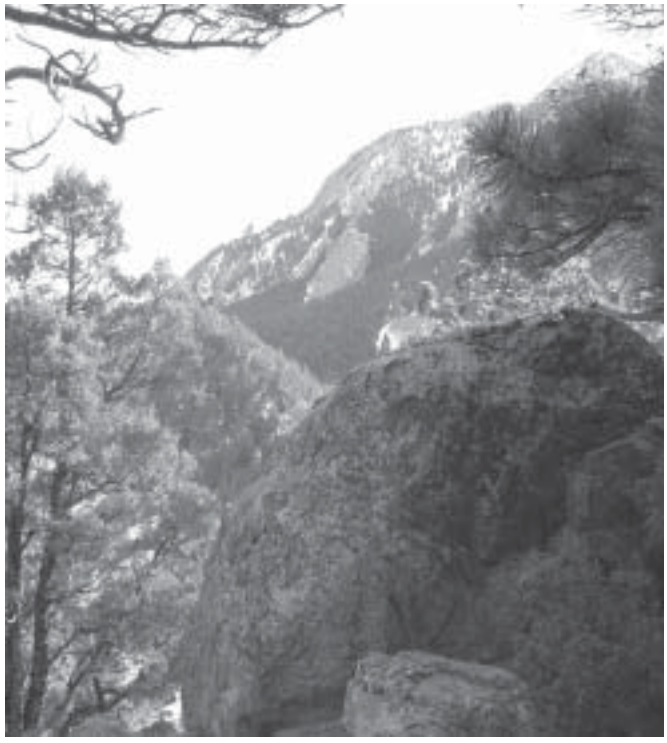
John D. Fulton, Clemson University
Saturday, August 2, 2:30 pm – 4:15 pm

How does a mathematical sciences department respond to a goal of establishing one or more mathematics education facets in the department? Drawing upon their extensive experience with the many facets of mathematics education, the panelists will advise how to build and nurture a mathematics education program (or mathematics education programs) in a department. Items addressed may include types of programs and types of degrees; the balance between content and methods; the role of mathematics education graduate programs; and research in undergraduate mathematics education; needed expertise; size of a "critical mass" of faculty or students needed; workload considerations; accreditation issues; and level of cooperation needed within the department, with other departments, with schools and school teachers, and with government. Panelists include Marilyn Carlson, Arizona State University; John Dossey, Illinois State University; James Lewis, University of Nebraska, Lincoln; Joseph Straight, State University of New York, Fredonia; and Martha Wallace, St. Olaf College. The session is co-sponsored by the MAA Committee on the Profession, the MAA Committee on the Mathematics Education of Teachers (COMET), and the MAA SIGMAA on Research in Undergraduate Mathematics Education. Come with questions for these highly experienced panelists.

APPLICATIONS OF COLLEGE ALGEBRA

Scott Herriott, Maharishi University of Management
Saturday, August 2, 2:30 pm – 3:50 pm

College algebra instructors are always looking for ways to motivate their students' interest in the subject. In this workshop, participants will receive three one page "mini cases" that describe interesting applications of college algebra to the managerial, social, or life/health sciences. With each application, 20-25 minutes will be spent reading, discussing, and solving the problem, as we would with our students in class. Solutions will be provided. In the final 15-30 minutes we will share ideas about other applications that can be developed and published for classroom use. Topics for this workshop may include "The Cost of Constructing a House," "Dating Neanderthals," and "Health Insurance Costs at Telegroup, Inc."



Photograph courtesy of Charissa Klotz.

Contributed Paper SESSIONS

MAA Contributed Paper Sessions are normally organized around a predetermined topic. Presenters are selected by the paper organizers after reviewing responses to a call for papers.

MAA CP A1 THE ART/SCIENCE OF USING MATHEMATICS IN APPLICATIONS

Kyle L. Riley, South Dakota School of Mines and Technology
Part 1: Thursday, July 31, 1:00 pm – 3:00 pm
Part 2: Friday, August 1, 3:15 pm – 5:15 pm

Mathematics is a valuable tool in a diverse array of disciplines. Many application problems appeal to the systematic reduction, logic, and structure that mathematical techniques can offer. On the other hand, using mathematics may also produce a beautiful insight into an application problem. Talks in this session will feature application problems that illustrate the beauty and the power of mathematics. Most presentations will easily lend themselves to be used as classroom modules in an undergraduate mathematics class.

MAA CP B1 INNOVATIONS IN THE TEACHING OF CALCULUS

Howard Penn, U.S. Naval Academy
Part 1: Thursday, July 31, 3:15 pm – 5:15 pm
Part 2: Friday, August 1, 1:00 pm – 3:00 pm

The last several years have seen many presentations at various meetings on innovative methods to teach calculus. This session will include talks about new ideas on how to teach all three semesters of calculus. These approaches may include, but are not limited to, the use of the computer or World Wide Web, student projects, student group work, and innovative presentations of applications.

MAA CP C1 CREATIVE USE OF TECHNOLOGY IN TEACHING MATHEMATICS

Mary L. Platt, Salem State College
Marcelle Bessman, Jacksonville University
Part 1: Thursday, July 31, 1:00 pm – 3:00 pm
Part 2: Friday, August 1, 3:15 pm – 5:15 pm

This session will focus on innovative uses of technology to support and enhance the learning of mathematics in all college courses. In particular, in the use of technology to support conceptual understanding and appreciation of the application of mathematical principles to solving real world problems. This session is sponsored by the MAA Committee on Computers in Mathematics Education (CCIME).

MAA CP D1 GETTING STUDENTS TO EXPLORE CONCEPTS THROUGH WRITING IN MATHEMATICS

Sarah L. Mabrouk, Framingham State College
Thursday, July 31, 1:00 pm – 3:00 pm

This session deals with papers about assignments and projects that require students to write about mathematical concepts, to express concepts in their own words, to interpret symbolic mathematics in their own words, and to write about mathematics, in general. Of particular interest will be papers that consider the effect of such projects/assignments throughout the semester on the students' understanding of course concepts and notations, the ability of students to communicate mathematics using words and symbols, and the attitude of students toward mathematics.

MAA CP E1 ADVANCES IN RECREATIONAL MATHEMATICS

Charles Ashbacher, Charles Ashbacher Technologies
Thursday, July 31, 3:15 pm – 5:15 pm

Papers in this session will consider recent advances in recreational mathematics, some of which have involved the use of computers. For the purposes of this session, the definition of recreational mathematics will be a broad one. The primary guideline used to determine suitability of subject will be the understandability of the mathematics.

MAA CP F1 E-LEARNING IN MATHEMATICS

Elias Deeba, University of Houston-Downtown
Ananda Gunawerdena, Carnegie-Mellon University
Thursday, July 31, 3:15 pm – 5:15 pm

This session includes papers that deal with methods of design, implementation, delivery assessment, and maintenance of complete e-learning environments, as well as experiences implementing such courses.

MAA CP G1 ASSESSMENT OF STUDENT LEARNING IN UNDERGRADUATE MATHEMATICS

Bill Marion, Valparaiso University
William Haver, Virginia Commonwealth University
Bernard Madison, University of Arkansas
Friday, August 1, 1:00 pm – 3:00 pm

Papers in this session describe an institution's program of assessment of student learning in a curricular block of undergraduate mathematics courses. The session is sponsored by the NSF-supported MAA Project "Supporting Assessment in Undergraduate Mathematics" (SAUM). The curricular blocks that have been identified as focus areas by SAUM are (1) math-

ematics major; (2) mathematics for teachers; (3) general education (or quantitative literacy) courses; (4) placement/developmental programs; (5) mathematics for and in mathematics-intensive majors; and (6) innovations (e.g. reform courses). More details can be found at http://www.maa.org/SAUM/index.html.

MAA CP H1 SIGMAA-RUME (APPLYING RESEARCH TO PRACTICE)

Anne Brown, Indiana University South Bend
Marilyn Carlson, Arizona State University
Jim Cottrill, Illinois State University
Friday, August 1, 3:15 pm – 5:15 pm

Papers in this session address research issues concerning the teaching and learning of undergraduate mathematics. This session will be devoted to expositions of research results and uses of research (RUME) in teaching. Presentations will include summaries of research results together with implications for the classroom, or specific examples describing how research results have informed instruction in actual college classrooms.

MAA CP I1 TECHNOLOGY INNOVATIONS IN MATHEMATICS EDUCATION FOR ELEMENTARY AND SECONDARY TEACHERS

Carol Vobach, University of Houston Downtown
Ron Barnes, University of Houston Downtown
Elias Deeba, University of Houston Downtown
John Hamman, Anne Arundel Community College
Kira Hamman, Hood College
Part 1: Friday, August 1, 1:00 pm – 3:00 pm
Part 2: Saturday, August 2, 3:15 pm – 5:15 pm

Mathematics is a valuable tool in a diverse array of disciplines. Many application problems appeal to the systematic reduction, logic, and structure that mathematical techniques can offer. On the other hand, using mathematics may also produce a beautiful insight into an application problem. This session seeks to find application problems that illustrate the beauty and the power of mathematics. Most presentations will easily lend themselves to be used as classroom modules in an undergraduate mathematics class.

MAA CP J1 INNOVATIVE APPROACHES IN QUANTITATIVE LITERACY

Richard J. Maher, Loyola University Chicago
Saturday, August 2, 1:00 pm – 3:00 pm

Discussions about quantitative or mathematical literacy have become more and more common over the past few years. This session will allow faculty who have developed successful approaches to share their work with others.

MAA CP K1 GENERAL CONTRIBUTED PAPER SESSION

Frank Ford, Providence College
Part 1: Thursday, July 31, 3:15 pm – 5:15 pm
Part 2: Friday, August 1, 1:00 pm – 3:00 pm
Part 3: Saturday, August 2, 3:15 pm – 5:15 pm

This session is designed for papers that do no fit into one of the other sessions. Papers may be presented on any mathematically related topic.

MAA CP L1 INNOVATIONS IN TEACHING UPPER DIVISION MATHEMATICS COURSES

David Mazur, Western New England College
Michael Axtell, Wabash College
Christa Coles, Elon University
Part 1: Saturday, August 2, 1:00 pm – 3:00 pm
Part 2: Saturday, August 2, 3:15 pm – 5:15 pm

This session offers a forum for faculty to disseminate innovative teaching techniques they have employed in upper level undergraduate courses — typically those beyond the calculus and differential equations sequences. These techniques may include, but are not limited to, student journals, guided reading assignments, and creative projects. The aim is for faculty to present successful techniques that have made a difference in their courses.

Student PROGRAM

MathFest includes a rich array of activities for students. Both students and faculty will be interested in presentations of student work and the invited lectures developed with students in mind.

MAA/PI MU EPSILON STUDENT RECEPTION

Wednesday, July 31, 5:30 pm – 6:30 pm

STUDENT HOSPITALITY CENTER

Richard and Araceli Neal, University of Oklahoma
Thursday, July 31, 9:00 am – 5:00 pm
Friday, August 1, 9:00 am – 5:00 pm
Saturday, August 2, 9:00 am – 3:00 pm
The Student Hospitality Center (SHC) provides a place for students and other MathFest attendees to meet for informal conversation, refreshment, and mathematical diversions. The SHC also provides programs for the MAA and Pi Mu Epsilon student paper sessions, packets for MAA student presenters, and information on MathFest activities of interest to students. Special information for students can be found at MAA Online at http://www.maa.org and at http://www.pme-math.org.

MAA STUDENT PAPER SESSIONS

Thomas E. Kelley, Henry Ford Community College
Thursday, July 31, 1:00 pm – 5:00 pm
Friday, August 1, 1:15 pm – 5:00 pm

PI MU EPSILON PAPER SESSIONS

Jennifer Galovich, St. John's University
Thursday, July 31, 1:00 pm – 5:00 pm
Friday, August 1, 1:15 pm – 5:00 pm

MAA MATHEMATICAL CONTEST IN MODELING (MCM) WINNERS

Ben Fusaro, Florida State University
Thursday, July 31, 5:15 pm – 6:30 pm

GRADUATE STUDENT RECEPTION

Thursday, July 31, 5:30 pm – 6:30 pm
See the MathFest Registration Form for ticket information.

PME BANQUET

Friday, August 1, 6:00 pm – 7:45 pm
See the MathFest Registration Form for ticket information.

PME J. SUTHERLAND FRAME LECTURE

Chaos Games and Fractal Images

Robert L. Devaney, Boston University
Friday, August 1, 8:00 pm – 8:50 pm
In this lecture we will describe some of the beautiful images that arise from the "Chaos Game." We will show how the simple steps of this game produce, when iterated millions of times, the intricate images known as fractals. We will describe some of the applications of this technique used in data compression as well as in Hollywood. We will also challenge students present to "Beat the Professor" at the chaos game and maybe win his computer.

SPECIAL SESSION

MATH HORIZONS

Arthur T. Benjamin, Harvey Mudd College
Jennifer J. Quinn, Occidental College
Saturday, August 2, 1:15 pm – 2:00 pm
Meet the new editors of *Math Horizons* magazine. It is the magazine written for students, filled with intriguing articles, profiles, problems, humor, and contests. We are looking for your suggestions and input and will be looking for students to serve on our Student Advisory Board.

MAA STUDENT WORKSHOP

Problems, Problems, Problems!

Clayton Dodge, University of Maine
Saturday, August 2, 2:10 pm – 3:50 pm
A presentation of a smattering of interesting mathematical problems with discussions of their solutions, followed by the opportunity to work selected problems. See the MathFest Registration Form for ticket information.

MAA STUDENT LECTURE

The Art of Mental Calculation

Arthur T. Benjamin, Harvey Mudd College
Saturday, August 2, 4:00 pm – 4:50 pm
Art Benjamin will demonstrate and explain how to perform rapid mental calculations.

STUDENT PROBLEM SOLVING COMPETITION

Richard Neal, University of Oklahoma
Saturday, August 2, 5:00 pm – 6:00 pm
This is the finals of the Problem Solving Competition. Universities and colleges that participate monthly on their own campuses by holding problem solving contests are invited to send two contestants. Each contestant will be required to solve a series of mathematical problems. Based upon the outcome, a champion and runner up will be named.

Minicourses

Minicourses offer four hours of focused instruction. Enrollment is limited and a separate registration fee is required. Refer to registration information for details.

MINICOURSE #1

BRIDGING THE GAP BETWEEN MATHEMATICS AND THE PHYSICAL SCIENCES

Tevian Dray, Oregon State University
Part 1: Thursday, July 31, 1:00 pm – 3:00 pm
Part 2: Friday, August 1, 1:00 pm – 3:00 pm

The key to bridging the 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.

MINICOURSE #2

FAIR ENOUGH? MATHEMATICS OF EQUITY

John C. Maceli and Stanley E. Seltzer, Ithaca College
Part 1: Thursday, July 31, 1:00 pm – 3:00 pm
Part 2: Friday, August 1, 1:00 pm – 3:00 pm

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.

MINICOURSE #3

A DYNAMICAL SYSTEMS APPROACH TO THE DIFFERENTIAL EQUATIONS COURSE

Robert L. Devaney, Boston University
Part 1: Thursday, July 31, 3:15 pm – 5:15 pm
Part 2: Saturday, August 2, 1:00 pm – 3:00 pm

This minicourse will give an overview of the Boston University Differential Equations Project, originally funded by the National Science Foundation. The BU project involves a complete redesign of the sophomore-level ODE course. It includes more emphasis on qualitative and geometric methods as well as the incorporation of technology and numerical methods throughout. This minicourse will be useful to college instructors wishing to restructure their ODE courses. Although the minicourse will include technology demonstrations, the BU project is independent of any particular type of technology. Students must have some access to computers or graphing calculators.

MINICOURSE #4

PREPARING MATHEMATICIANS TO EDUCATE TEACHERS

Patrick Callahan, University of California and Jack Narayan, SUNY Oswego
Part 1: Thursday, July 31, 3:15 pm – 5:15 pm
Part 2: Saturday, August 2, 1:00 pm – 3:00 pm

What background does a mathematician need in order to teach mathematics courses for future K-12 teachers? This is the question being addressed by MAA's PMET initiative. This report will discuss the activities of the initiative and share with participants some of what we have learned. This will be done via videos, hands-on activities, presentations, and discussion. Participants will also learn about resources that PMET has developed and what is coming in the future, as well as programs in which the participants may wish to engage. PMET is funded by a grant from the National Science Foundation's Division of Undergraduate Education, with additional funding from Texas Instruments.

MINICOURSE #5

SMALL GRAPHS FOR MODELING LARGE STRUCTURES

Jack Graver, Syracuse University
Part 1: Friday, August 1, 3:15 pm – 5:15 pm
Part 2: Saturday, August 2, 3:15 pm – 5:15 pm

The large structures of the title are large plane graphs used to model geodesic domes, packings on a sphere, large carbon molecules (fullerenes and nanotubes), and even the Callaway golf ball. Standard tools of graph theory (e.g. Euler's formula, adjacency matrices, shortest spanning tree algorithms, symmetry groups) are used to encode the structure of these large models into much smaller, easily manipulated graphs. The necessary graph theory tools will be reviewed and the architectural and chemical backgrounds of the structures to be studied will be presented. Other problems from chemistry requiring these same tools will be considered.

MINICOURSE #6

INTERACTIVE REAL-WORLD ACTIVITES FOR COURSES BELOW CALCULUS

Janet L. Andersen and Todd M. Swanson, Hope College
Part 1: Friday, August 1, 3:15 pm – 5:15 pm
Part 2: Saturday, August 2, 3:15 pm – 5:15 pm

We will present and have participants work through some interactive activities based on real-world examples. The activities will be suitable for college algebra, statistics, trigonometry, precalculus, and mathematics general education courses. They will be organized in terms of preparation time, class time, and out of class time for both instructor and students. We will give examples of activities that can be used with less than 15 minutes of class time as well as those that will take more than 60 minutes or multiple class periods. Each participant will receive a collection of the materials presented.

Special PROGRAMS

Special Programs function as miniconferences. They are organized around relevant themes and are normally held in conjunction to MathFest. They may precede, follow, or be held during MathFest itself.

WORKSHOP ON TRAINING T.A.s IN DEPARTMENTS AND AT SECTION MEETINGS

Diane Hermann, University of Chicago
Luise-Charlotte Kappe, SUNY at Binghamton
David Manderscheid, University of Iowa
Thomas W. Rishel, Cornell University
Part 1: Wednesday, July 30, 10:00 am – Noon
Part 2: Wednesday, July 30, 1:30 pm – 4:00 pm
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 young faculty? We will provide a skeleton outline of possible training approaches for individual institutions, as well as for section-level training programs.

NATURE WALK

Marty Walter, University of Colorado
Saturday, August 2, 1:00 pm – 3:00 pm
Marty Walter will lead the walk and enlighten us on the local flora and fauna. Marty, an ardent environmentalist and scourge of local polluters, is a long-time resident of Boulder. The walk is sponsored by the Environmental Mathematics SIGMAA.

CALL FOR MINICOURSE ORGANIZERS

The MAA Committee on Minicourses is soliciting proposals for new minicourses to be given at MathFest in Providence, August 12-14, 2004 and the AMS-MAA Joint Mathematics Meeting in Atlanta, January 5-8, 2005. Most minicourses are related to the undergraduate curriculum, although any topic of interest to the MAA membership will be considered.

To find more information on how to submit a proposal see http://www.maa.org/meetings/miniguide.htm. The deadlkine for submission for the Providence MathFest is October 7, 2003 and for the Atlanta Joint Mathematics Meeting it is December 2, 2003.

TWO-DAY SHORT COURSE

Reading the Book of Life: How Bioinformatics Makes Sense of Molecular Messages

John R. Jungck, Beloit College
Part 1: Tuesday, July 29, 9:00 am – 5:00 pm
Part 2: Wednesday, July 30, 9:00 am – 5:00 pm
Bioinformatics is an emerging area that combines extensive mathematical and computer applications in molecular biology. This course will introduce how genetic sequences can be analyzed with coding and information theory, computational linguistics, dynamic programming of multiple sequence comparison, and phylogenetic trees. Other topics include: molecular surface calculations as well as X-ray crystallographic approaches to structure determination, knot theory for studying the topological changes involved in replication, recombination, and repair of DNA, RNA folding, and analysis of DNA chips to study expression of genes. The level of mathematics will be at the undergraduate level and often is accessible to biology students.

Genetic Codes as Codes: Towards a Theoretical Basis for Bioinformatics

John R. Jungck, Beloit College

DNA Motif Lexicon and Moving Research to the Classroom: Linking Courses in Biology and Computer Science

Mark D. Leblanc, Wheaton College

Topological Toys, Tinkering Thinking: Knot Theory and DNA

John R. Jungck, Beloit College

RNA Folding and Combinatorics

Asamoah Nkwanta, Morgan State University

Microarray Data Analysis: From Tiny Pixels to the Big Picture

Laurie J. Heyer, Davidson College

The Middle Level Problem of Genomics: Interactive Assembly of Restriction Fragments Using Interval Graphs and Extending This Approach to Metabolonomics

John R. Jungck, Beloit College

X-ray Crystallography and Protein Structure

Stephen Everse, University of Vermont

Escherian Esthetics of Voronoi Polygons and Polyhedra: How to Fold a Protein and Scale Independence in Irregular Biological Patterns

John R. Jungck, Beloit College

PRESENTING MATHEMATICAL MASTERPIECES AND POWERFUL TECHNIQUES OF EFFECTIVE THINKING TO NON-SCIENCE STUDENTS

Edward B. Burger, Michael Starbird
July 27-30, 2003
The University of Colorado at Boulder, Boulder, Colorado

Mathematics contains some of the greatest ideas of humankind and employs powerful methods of analysis that transcend mathematics. Topics such as infinity, the fourth dimension, probability, and chaos spark everyone's imagination. These ideas are comparable to masterpieces of art, literature, or philosophy. Our challenge is to convey the genuine ideas of classical and new mathematics and highlight the important strategies of analysis that can be applied to all of life's issues.

This workshop invites participants to discover and experience hands-on methods for bringing deep mathematical results to life and for restructuring such courses to emphasize and celebrate techniques of thinking. It will also address the fundamental issue of how mathematics should fit into the real curricula of our institutions and the real lives of our students.

Information on registration and housing may be found at http://www.maa.org/prep or by contacting the Department of Programs and Services at 800-741-9415 or programs@maa.org. Registration for this workshop must be made separately from MathFest.

This session is offered as a MAA PREP (Professional Enhancement Program) workshop funded through NSF grant DUE-0089005, with additional support from Key Curriculum Press.

MATHEMATICS FOR BUSINESS DECISIONS

Richard Thompson and Christopher Lamoureux
Wednesday, July 30, 2003

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

The six hour presentation will provide time to explore our treatment of selected mathematical topics and to demonstrate some of our actual, day to day, teaching methods. Participants will have the opportunity to work through one of the major business projects on their own. This in depth treatment should be of interest to teachers having no prior experience with ***Mathematics for Business Decisions***, and to those who have attended shorter workshops on the material. The presentation will be particularly helpful for instructors who are considering adoption of the new texts for classroom use.

Exhibit Hall Information

Shop for new publications and products and revisit your old favorites at the MathFest 2003 Exhibit Hall. This is your opportunity to review the latest books, test innovative calculators and preview software. Meet company representatives and receive feedback that will assist you in making purchasing decisions.

In the Exhibit Hall, you will find the popular MAA Bookstore. There you can select from MAA's extensive collection of books on mathematics education, and related topics.

Schedule time to browse through the new titles premiering this year in the Exhibit Hall. Purchase books at the meeting and you'll save money with a special discount.

LOCATION

Millennium Harvest House Hotel

EXHIBIT HOURS

Thursday, July 31, 2003 9:00 am – 5: 00 pm
Friday, August 1, 2003 9:00 am – 5: 00 pm
Saturday, August 2, 2003 9:00 am – 3: 00 pm

Join us for a reception on Thursday afternoon sponsored by Addison-Wesley.

Project NExT NEW EXPERIENCES IN TEACHING WORKSHOP

Project NExT is a professional development program for new Ph.D.s in the mathematical sciences. This workshop is restricted to those who applied and were selected as Project NExT Fellows.

Faculty for whom the 2003-2004 academic year will be the first or second year of full-time teaching at the college/university level are invited to apply to become Project NExT Fellows. For more information see the Project NExT website at http://archives.math.utk.edu/projnext/.

Participation in the Project NExT workshop at MathFest 2003 is restricted to those who applied and were selected as Project NExT Fellows. Those chosen as 2003-04 Fellows will receive notification and an invitation to participate in the program.

Project NExT is an MAA professional development program for new and recent Ph.D.'s in the mathematical sciences (including pure and applied mathematics, statistics, operations research, and mathematics education). It addresses all aspects of an academic career: improving the teaching and learning of mathematics, engaging in research and scholarship, and participating in professional activities. It also provides the participants with a network of peers and mentors as they assume these responsibilities.

Each year there is an opportunity for about sixty faculty members from colleges and universities throughout the country to become Project NExT Fellows. Applications must be received by April 11, 2003. Institutions employing Project NExT Fellows are expected to provide travel expenses for the meetings, and assurances of institutional support are of critical importance in the application process. Application materials and more information are available on the Project NExT webpage (http://archives.math.utk.edu/projectnext/).

Project NExT Workshop for 2002-2003 and 2003-2004 Fellows

Monday, July 28th	1:30 pm – 9:00 pm (for 2003-04 Fellows)
Tuesday, July 29th	8:30 am – 5:25 pm (for 2003-04 Fellows)
Wednesday, July 30th	8:15 am – 5:45 pm (for 2002-03 and 2003-04 Fellows)

At this workshop and at Project NExT sessions during MathFest, Fellows will explore and discuss issues that are of special relevance to beginning faculty, including:

- Innovative approaches to teaching differential equations, statistics, and more advanced courses;
- Effective strategies for incorporating mathematical modeling into the curriculum;
- Involving undergraduates in mathematical research;
- Alternative methods of assessing student learning;
- Perspectives from pedagogical research;
- Getting your research off to a good start and writing grant proposals;
- Balancing teaching and research.

During the following year, Project NExT Fellows will participate in an electronic network that links Project NExT Fellows with one another and with distinguished teachers of mathematics, special events at the 2004 Joint Mathematics Meetings, and a one-day workshop and the MAA MathFest immediately afterwards in the summer of 2004. There is no fee for participation in Project NExT itself, and the 2003-04 Fellows will be provided with room and board at the Project NExT Workshop in Boulder.

Project NExT is a program of The Mathematical Association of America. It receives major funding from The ExxonMobil Foundation, with additional funding from The Dolciani – Halloran Foundation, The American Mathematical Society, The Educational Advancement Foundation, The American Statistical Association, The Association of Mathematics Teacher Educators, and the Greater MAA fund.

Social EVENTS

There are social events planned for every evening of MathFest for all to enjoy. Participants and their guests are welcome to take part in one or all. Please make reservations early as some events have tickets which are only available through advance registration.

OPENING RECEPTION

Wednesday, July 30, 6:30 pm – 7:30 pm

The Association is pleased to hold a reception for all MathFest participants just prior to the Opening Banquet.

OPENING BANQUET

Wednesday, July 30, 7:30 pm – 9:30 pm

Master of Ceremonies: David R. Stone, Georgia Southern University. Continue this exciting evening by joining new and long-time friends and colleagues for dinner. There will be an after dinner presentation by Tom Noddy, entitled "Bubble Magic: Science and Soap Films" a demonstration of Bubble Magic along with commentary about mathematics and physics involved. Tickets are $32 and are available through advanced registration only. (Vegetarian dinners are available)

WESTERN BARBEQUE AND SQUARE DANCE

Thursday, July 31, 6:30 pm – 10:00 pm

The menu is buffet style and includes salads, sirloin burgers, marinated bratwurst and grilled chicken breast and dessert. Tickets are $33.00 for adults and $18.75 for children ages 5-12.Tickets are available through preregistration only.

PME BANQUET

Friday, August 1, 6:00 pm – 7:45 pm

Tickets are $20 for PME members and their families as well as for MAA Student Chapter members and students giving talks at MAA Student Paper sessions, and $30 for others. Purchasing tickets through advanced registration is recommended, since only a limited number of tickets will be available for sale on site. After the banquet you are encouraged to attend the popular PME J. Sutherland Frame Lecture, given this year by Bob Devaney, Boston University, who will speak on "Chaos Games and Fractal Images" at 8:00 pm.

AWM RECEPTION

Friday, August 1, 9:00 pm – 11:00 pm

Plan to attend this cooperative party with the Association for Women in Mathematics following the Frame Lecture. All supporters of women in mathematics are encouraged to attend and meet AWM members.

MAA SILVER AND GOLD BANQUET

Saturday, August 2, 6:00 pm – 9:00 pm

This annual member banquet honors those individuals who have been members of the MAA for 25 years or more. The emcee will be Ron Graham, President of the Mathematical Association of America. Lynn Steen of St. Olaf College will be the featured speaker. There will be a cash-bar reception beginning at 6:00 pm with the banquet following at 6:30 pm. Tickets are $41 each and purchasing tickets through advanced registration is recommended, since only a limited number of tickets will be available for sale onsite.

Call for Contributed Paper Session Organizers

The MAA Committee on Sessions of Contributed Papers selects topics and organizers for contributed paper sessions at Joint Mathematics Meetings and MathFests. The committee would be delighted to hear from MAA members who are interested in organizing such sessions or who have suggested
topics.

Planning is now underway for the MathFest in Providence, August 12-14, 2004 and the AMS-MAA Joint Mathematics Meeting in Atlanta, January 5-8, 2005. The deadline for receipt of proposals for organizers for the Providence MathFest is October 14, 2003 and for the Atlanta Joint Mathematics Meeting it is December 31, 2003.

Send (preferably by e-mail) proposal, title, name(s) of the organizer(s) and a one-page summary to the chair of the Committee, Howard Penn at hlp@usna.edu.

Can't come to MathFest? Try an MAA PREP Workshop!

PREP

Professional Enhancement Programs of the MAA

Administered through the Department of Programs and Services, the MAA's Professional Enhancement Program (PREP) is our primary umbrella for a variety of programs aimed at collegiate mathematics faculty. Initially funded by the National Science Foundation in 2001 to offer a series of workshops covering a wide variety of topics, PREP is expanding to include and support other MAA programs which offer high-quality professional enrichment experiences to mathematics faculty from all institutes for higher education.

Summer 2003 Professional Enhancement Programs

Integrating Technology Into Mathematics Instruction (A Focus on Precalculus/Calculus)

May 26–30, 2003, Houston Community College, Houston, Texas

Jacqueline Brannon Giles, Wade Ellis

Discrete Mathematics: An Early Foundation for the Study of Computer Science

June 2–6, 2003, Valparaiso University Valparaiso, Indiana

Bill Marion, Susanna Epp, Peter Henderson, Henry Walker

Knot Theory

June 9–13, 2003, Wake Forest University Winston-Salem, North Carolina

Colin Adams

Leading the Academic Department: A Workshop for Chairs of Mathematical Sciences Departments

June 19–22, 2003, Reston Hyatt Reston, Virginia

Tina Straley, Jon Scott

Topics in Applied Casualty Actuarial Science

With support from the Casualty Actuarial Society

June 23–26, 2003, The Thompson Center University of Texas at Austin Austin, Texas

Tom Struppeck

Earth Math

Additional support from NSF grant # DUE-9952568, Department of Education FIPSE grant #P116B001780, Portland State University, and Kennesaw State University

June 25–28, 2003

Online or Onsite from Portland State University Portland, Oregon

Nancy Zumoff, Paul Latiolais, Christopher Schaufele

Active Learning Approaches to Teaching Mathematics Content Courses for Elementary and Middle-School Teachers

July 7–11, 2003, Western Oregon University Monmouth, Oregon

Laurie Burton, Maria Fung

Quantitative Literacy Across the Curriuclum, Northeast Workshop

July 7–12, 2003 Kimball Union Academy Meriden, New Hampshire

Kim Rheinlander

Authoring Online Interactive Materials in Mathematics

July 14–18, 2003, Online from Duke University Durham, North Carolina

Lang Moore, David Smith, Frank Wattenberg

Abstract Algebra With Gap

July 14–18, 2003 Online from Saint Louis University St. Louis, Missouri

Russell Blyth, Julianne Rainbolt

Creating and Teaching Courses That Integrate Biology and Mathematics
July 21–25, 2003, Hope College
Holland, Michigan
Janet Andersen, Eric Marland

Regression Analysis: The Heart of Statistical Methdology
Co-sponsored by the American Statistical Association
July 23–27, 2003, Oberlin College
Oberlin, Ohio
Richard Scheaffer, Jeffrey Witmer

Presenting Mathematical Masterpieces and Powerful Techniques of Effective Thinking to Non-Science Students
Additional support from Key Curriculum Press
July 27–30, 2003, The University of Colorado at Boulder
Boulder, Colorado
Edward Burger, Michael Starbird

Quantitative Literacy Across the Curriculum, Northwest Workshop
Co-sponsored by the National Numeracy Network
August 3–8, 2003, Sleeping Lady Mountain Retreat Center
Leavenworth, Washington
Emily Decker, Gillies Malnarich

Mathematical Methods and Modeling for Secondary Mathematics Teacher Education
August 3–8, 2003, Montana State University
Bozeman, Montana
John Dossey, Frank Giordano, Sharon McCrone

Major funding for PREP workshops is provided by NSF grant #DUE-0089005. Application materials and additional information available at http://www.maa.org/prep. Register early as space is limited.

PMET
PREPARING MATHEMATICIANS TO EDUCATE TEACHERS

Workshops for Summer 2003

A growing set of national reports calls for better preparation of the nation's mathematics teachers by mathematics faculty. To help meet this need, the MAA has initiated a multifaceted program, Preparing Mathematicians to Educate Teachers (PMET). PMET offers a series of workshops and minicourses which focus on the mathematical knowledge and understanding that K-12 teachers of mathematics need to have. The program will also support grassroots innovation in teacher education through regional networks and serve as a source for information and resources regarding mathematics teacher preparation.

Preparing Elementary Teachers
June 1-7, 2003, Lincoln, Nebraska
Jim Lewis, Ruth Heaton
Application Deadline: May 1, 2003

Preparing Secondary Teachers
June 8-20, 2003, Potsdam, New York
(with second session in Summer, 2004)
Ed Dubinsky
Application Deadline: May 1, 2003

Preparing Elementary Teachers
June 15-21, 2003, Arcata, California
Patrick Callahan
Application Deadline: May 1, 2003

Preparing ElementaryTeachers
August 1-3, 2003, Boone, North Carolina
David Royster, Holly Hirst
Application Deadline: May 15, 2003

Major funding for PMET is provided by NSF grant #DUE-0230847, with additional support from Texas Instruments. Application materials and additional information available at http://www.maa.org/pmet.

REGISTRATION INFORMATION

REGISTRATION DESK:

The registration desk will be located in the Millennium Hotel. It will be open Wednesday, July 30 from noon to 7:00 p.m., Thursday, July 31 and Friday, August 1 from 8:00 a.m. to 4:00 p.m., and Saturday, August 2 from 8:00 a.m. to 2:00 p.m. You may pick up your registration materials, register on-site, and purchase event tickets, where available, at this location.

REGISTRATION FEES

	By 6/17	After 6/17
Member Registration fee	$ 180	$ 235
Nonmember	$ 265	$ 340
Grad Student	$ 40	$ 50
Undergraduate Student	$ 25	$ 30
Unemployed	$ 40	$ 50
Individual from a Developing Country	$ 40	$ 50
K-12 Teacher	$ 40	$ 50
Emeritis member	$ 40	$ 50
One-day T F S	$ 99	$ 99
High School Student	$ 10	$ 10
Guest	$ 10	$ 10
Minicourses	$ 60	$ 65
Short Course		
MAA or AMS Member and MathFest Participant	$ 125	$ 140
NonMember or MathFest NonParticipant	$175	$190
Students	$ 50	$ 60

EARLY BIRD REGISTRATION:

Register by **June 17** to take advantage of the early bird savings and receive your registration packet before the meeting. Registration packets will be mailed during the week of **July 8** and there will be no need to register once you arrive.

REGULAR REGISTRATION:

Advance Registration/Housing Forms received after **June 17** and before **July 15** must include regular registration fees. Participants registering during this period must pick up their registration packets at the registration desk. Participants may also register on-site at the registration desk.

ONLINE REGISTRATION:

Register on the internet for MathFest, university housing, and reservations at the Millennium Harvest House Hotel. Go to http://www.maa.org and click on "Register for MathFest 2003." Credit card payment is required for internet registration. Payment is accepted with the following credit cards: MasterCard, Visa, American Express, and Discover.

MINICOURSE/SHORT COURSE REGISTRATION:

Advance Registration/Housing Forms must be received by **July 15**. Enroll early; space is limited! If a course is full, you will be notified. On-site registration is allowed if enrollment permits. The MAA reserves the right to cancel courses due to low enrollment. Full refunds will be issued for cancelled courses. Otherwise, minicourse and/or short course cancellations must be received by **July 30** to receive a 50% refund.

MATHFEST CANCELLATIONS:

Cancellations for events and banquets must be received by July 15th to receive a 50% refund. MathFest cancellations must be received by **July 30** to receive a 50% refund for registration. If your registration packet was mailed before your cancellation, you must return your badge to the MMSB, P. O. Box 6887, Providence, RI 02940 to receive your refund.

PAYMENT/MAILING ADDRESS

The MAA has contracted with the American Mathematical Society as its meeting planner. The MMSB will coordinate housing for MathFest. Make checks payable to the MMSB. Checks drawn on foreign banks must be in equivalent foreign currency at current exchange rates. Mail/fax form to:

Mathematics Meetings Service Bureau (MMSB)
P. O. Box 6887
Providence, RI 02940-6887
Fax: 401-455-4004

Questions/Changes on Registration and Housing:
1-800-321-4267, ext. 4143 or 4144
Email: mmsb@ams.org

MATHFEST HOUSING

Rooms may be reserved at the Millennium Harvest Hotel, Best Western Boulder Inn, Quality Inn & Suites, and University of Colorado.

HOTELS

Reservations at the Millennium Harvest House Hotel **must be made through the Mathematics Meetings Service Bureau (MMSB) via the MathFest Registration/Housing Form.** Reservations made with the hotel directly will be subject to a higher room rate. The MMSB can process reservations and changes until **4:00 p.m. on July 1, 2003**. Reservations and changes for the Millennium Harvest House Hotel can be made directly with the hotel **starting on July 8, 2003**. Rates include an administrative fee for the meeting.

Reservations for the Best Western Boulder Inn and the Quality Inn & Suites Boulder must be made directly with the hotels. Participants should mention **MATHFEST 2003** to receive the

MathFest rates. The hotels must receive all reservations by **deadlines shown below.**

All rates are subject to a 9.75% state tax. Any reservations cancelled less than 48 hours prior to arrival will be subject to a cancellation fee equal to one night's stay. Rooms will fill quickly at these properties so **participants are advised to reserve rooms as early as possible.** After deadlines listed, reservations can be made with the hotels based only on rate and space availability and at the hotels' discretion.

MILLENNIUM HARVEST HOUSE HOTEL (Headquarters)

.8 miles to Engineering Building (talks). Shuttle service will be provided.
1345 28th Street
Boulder, CO 80302
$138.00 single/double
(Reservations through MMSB only until July 1, 2003)

Environmentally friendly and full service hotel; restaurant; lounge; exercise room; indoor/outdoor pools; indoor jacuzzi; jogging/bike path; tennis courts; free parking for overnight guests; physically challenged and nonsmoking rooms available; rooms include full amenities with data ports; windows open.

A credit card number or a check in the amount of one night stay is required to guarantee a room. Check-in: 3:00 p.m. Check-out: 11 a.m. (Late check-outs may be subject to a late charge.)

DIRECTIONS from Denver International Airport:
To: Millennium Harvest House Hotel, Boulder: From the airport grounds, it is about a 40 minute ride to the hotel. Take Pena Blvd to I-70 West to I-270 to I-76 West to I-25 North to Highway 36 West, which turns into 28 Street and takes you into Boulder. Go through one traffic light (Colorado Ave.) then watch for a green Millennium Harvest House Hotel sign on the left.

BEST WESTERN BOULDER INN

Limited amount of rooms available
Located 1 mile to Engineering Building (talks).
770 28th Street
Boulder, CO 80303
1-800-233-8469
303-402-9118 (fax)
$84 single, $94 double; $4.50 per each additional person
Rates include deluxe continental breakfast and free pass to nearby fitness club.
http://www.boulderinn.com/
(Reservations made directly with hotel until 6/27/03)

Full service hotel; outdoor heated pool; indoor Jacuzzi and sauna; free parking; free local calls; physically challenged and nonsmoking rooms available; rooms include full amenities with data ports; windows open.

A credit card number or a check in the amount of one night stay is required to guarantee a room. Check-in: 3:00 p.m. Check-out: Noon (Late check-outs may be subject to a late charge.)

Please call hotel for information on transportation to the airport.

QUALITY INN & SUITES BOULDER

Limited amount of rooms available
Located 1.5 miles to Engineering Building (talks).
2-minute drive
2020 Arapahoe Avenue
Boulder, CO 80303
303-449-7550; 1-888-449-7550
303- 449-1082 (fax)
$99 single/double; no charge for additional persons
Rates include full cooked breakfast
http://www.qualityinnboulder.com/
(Reservations made directly with hotel until 6/27/03)

Environmentally friendly hotel; indoor heated pool; fitness center; free parking; physically challenged and nonsmoking rooms available; rooms include full amenities with microwaves, refrigerators, and smart lamps; outside entrance to rooms.

A credit card number or a check in the amount of one night stay is required to guarantee a room. Check-in: 3:00 p.m. Check-out: Noon (Late check-outs may be subject to a late charge.)

Please call hotel for information on transportation to the airport.

UNIVERSITY HOUSING

Williams Village Residence Hall Complex
1.3 miles to Millennium Hotel (invited addresses) & .5 miles to Engineering Building (talks). Shuttle service to the Millenium and Engineering building will be provided.
University of Colorado, Boulder
500 30th Street
Boulder, CO 80310

Cost per person occupying a bed is **$85.50 per person, single, and $58 per person, double**. Rates include a meal package of breakfast the next morning; however, there will not be a breakfast following the night of 8/2. Breakfast cannot be included for that morning and the rates for the night of August 2 will be **$78 per person single**, and **$50.50 per person double**. Rates also include a 9.75% state tax, 7.66% tax on food, and an administrative fee for the meeting.

The meal plan starts with breakfast on 7/31 and ends with breakfast on 8/2. Again, no breakfast is offered for 8/3. Sorry, refunds cannot be issued for meals missed or cancelled at the meeting. Only participants occupying a bed are eligible for the meal plan. Children under six years may sleep and eat with

their parents free of charge. Children 6 – 12 years will be charged the child rate for room and may eat free. Children over 12 years will be charged the full adult rate for room and board. Maximum number of persons in a room is two, except for parents with children five years or younger.

Williams Village Complex

The residence halls at Williams Village are air conditioned, with elevators and wheelchair accessibility. Most rooms are regular dorm-style rooms with 2 beds, 2 desks, reading lights, an overhead light, phones, and a micro fridge. There is a bathroom for each gender on each floor. Other types of rooms in this complex are 1) room for one person with private bath, 2) 2-bedroom apartment for two or four people with one private bath, and 3) room for two people with two beds and private bath. These rooms will be called a special single or a special double and are VERY LIMITED. They can be reserved upon request and on a first-come first-serve basis. Please see the MathFest Registration/Housing Form for rates.

A special check-in desk will be set up for MathFest and it will be located in the Darley Commons Building which is also in Williams Village. Hours of operation will be Monday through Friday 11:00 a.m. to 11:00 p.m. However, the building will be open 24 hours. A **$45 per key charge** will be assessed to anyone that loses his or her key or does not return it at checkout. All participants who lose their key will be charged by the MMSB after the meeting.

Reservations cannot be made directly with the university. Detailed room rates may be found on the MathFest Registration/Housing Form. Rooms will be available from **July 27** through **August 3.**

To reserve university housing, please send a completed Housing Form to the Mathematics Meetings Service Bureau (MMSB). All completed forms must be received by the MMSB by 4:00 p.m. on **July 1.** Changes may be accepted by the MMSB until 4:00 p.m. on **July 18.** A 15% cancellation fee will be charged for all university housing cancellations made by **July 18**. Unfortunately, refunds for changes and cancellations of university housing after **July 18** cannot be issued.

DIRECTIONS from Denver International Airport:
To: Williams Village Residence Hall Complex - University of Colorado, Boulder: From the airport grounds, it is about a 40 minute ride to Williams Village. Exit the airport (you will be on Pena Blvd) and take I-70 west (towards the mountains). Exit onto I-270 North. This will merge into I-25. Exit onto Highway 36 (it curves northwest; this is a left exit) to Boulder. To get to Williams Village, take the Baseline Rd exit and go right onto Baseline (east). Then take a right at the first stoplight (30th St.) and you are at Williams Village.

DINING

Meals will be served in the Darley Commons Building in Williams Village. Operation hours for meals are: breakfast 7:00 a.m. to 8:30 a.m., lunch 11:00 a.m. to 1:30 p.m., and dinner 5:00 p.m. to 6:30 p.m. Hours are subject to change. Meals are all-you-can-eat cafeteria-style. Sorry, Kosher meals are not offered. Participants must show their meal pass for admission to the dining hall. **Meals will not be available on a cash basis at this hall.**

Meals will be available on a cash basis at the Alfred Packer Grill in the University Memorial Center 7:00 a.m. – 2:30 p.m. Monday through Friday and 10:00 a.m. – 2:30 p.m. on Saturday. There is also a small place in Engineering that is a grill with sandwiches, burgers, snacks, and other hot items. It is open from 7:00 a.m.– 1:30 p.m. The business building next door to Engineering has a small eatery in the basement that has hot items, sandwiches, soup; same hours. Please note that the Engineering and Business dining centers are small in size and cannot accommodate serving large groups in a short time period. In addition, there are many eateries located .3 to .5 miles north, south, east, and west of campus ranging from fast food to elegant restaurants.

PARKING

Participants may park in the parking lot behind Stearns (Lot 605 or 612) and will need to purchase a weekly parking permit. Weekly permits cost $18.50 and may be purchased at the Darley Commons Building. Daily permits cost $5.00 and may be purchased at the Transportation Center located across the street and on the east side of the Engineering Building. Participants should park on the street while they check in for housing. The street parking is limited to two hours. All parking fees and permits are the sole responsibility of each participant. Participants interested in obtaining weekly parking permits should indicate on the Registration/Housing Form. Based on this information, an estimated count will be given to the university prior to the meeting to ensure that an adequate amount of permits will be available. **Parking permits cannot be purchased through advance registration.**

TRAVEL INFORMATION:

AIRLINE INFORMATION: United Airlines is the official airline for MathFest 2003. To obtain a discounted fare on United Airlines make your reservations by calling 1-800-521-4041 between the hours of 8:00 a.m. and 10:00 p.m., Eastern Time. Please be sure to refer to United Airlines Meeting ID number 560HM.

The nearest airport is the Denver International Airport (DIA), located in Denver, Colorado approximately 40 minutes from the Millennium Harvest House Hotel Boulder, Williams Village Residence Hall Complex and the University of Colorado, Boulder.

TRANSPORTATION: Denver International Airport (DIA) to Millennium Harvest House Hotel, Boulder or Williams Village Residence Hall Complex:

SUPER SHUTTLE – BOULDER (tel. 303-444-0808) departs the DIA at 10 minutes after the hour, every hour between 6:00 a.m. and 11:00 p.m. to the Millennium Harvest House Hotel and Williams Village Residence Hall Complex for a one way fee of $19. To take the BOULDER Super Shuttle go to the Ground Transportation Desk in the Baggage Claim area and look for the signs for BOULDER Super Shuttle.

TAXI INFORMATION: Taxi services are located outside doors 506, 507 and 510. Taxi companies serving Denver International Airport are: Metro Taxi 303-333-3333, Yellow Cab 303-777-7777, Freedom Cab 303-292-8900. Fares from the airport are approximately $75 one way.

PUBLIC TRANSPORTATION: Commercial transportation is located at curbside, directly outside the baggage claim area.

For more information on Colorado transportation http://www.bouldercoloradousa.com/transportation.html.

CAR RENTAL INFORMATION:
Avis is the official car rental company for MathFest 2003. When making your reservations you must use Avis Discount Number B159265 for the discounted meeting rate. Rates are available from July 22, 2003 to August 9, 2003. Reservations can be made by telephone (800) 331-1600 or online at www.avis.com.

The Flatirons outside of Boulder, Colorado. Photo courtesy of the University of Colorado, Boulder.

Program AT A GLANCE

MONDAY, JULY 28TH

11:00 am – 5:00 pm **Project NExT Registration**
Darley Commons, Williams Village

1:30 pm – 9:00 pm **Project NExT Workshop**
(for 2003-04 Fellows) Williams Village

8:15 am – 5:00 pm **Project NExT Registration**
Darley Commons, Williams Village

8:30 am – 5:25 pm **Project NExT Workshop**
(for 2003-04 Fellows) Williams Village

9:00 am – 5:00 pm **Special Program**
Part 1: Two-Day Short Course
Reading the Book of Life: How Bioinformatics Makes Sense Molecular Messages
John R. Jungck, Beloit College

8:00 am – 3:00 pm **Project NExT Registration**
Darley Commons, Williams Village

8:15 am – 5:45 pm **Project NExT Workshop**
(for 2002-03 and 2003-04 Fellows)
Williams Village

9:00 am – 12:00 pm **Special Program**
Mathematics for Business Decisions
Richard Thompson and Chris Lamoureux, University of Arizona

9:00 am – 5:00 pm **Special Program**
Part 2: Two-Day Short Course
Reading the Book of Life: How Bioinformatics Makes Sense Molecular Messages
John R. Jungck, Beloit College

10:00 am – Noon **Special Program, Part 1**
A Workshop on Training T.A.s in Departments and at Section Meetings
Diane Hermann, University of Chicago
Luise-Charlotte Kappe, SUNY at Binghamton
David Manderscheid, University of Iowa
Thomas W. Rishel, Cornell University

Noon – 7:00 pm **MathFest Registration**

1:30 pm– 4:00 pm **Special Program, Part 2**
A Workshop on Training T.A.s in Departments and at Section Meetings
Diane Hermann, University of Chicago
Luise-Charlotte Kappe, SUNY at Binghamton
David Manderscheid, University of Iowa
Thomas W. Rishel, Cornell University

2:00 pm – 5:00 pm **Special Program**
Mathematics for Business Decisions
Richard Thompson and Chris Lamoureux, University of Arizona

5:30 pm – 6:30 pm **MAA /PI MU EPSILON**
Student Reception

6:30 pm – 7:30 pm **Opening Reception**

7:30 pm – 9:30 pm **Opening Banquet**

THURSDAY, JULY 31ST

8:00 am – 4:00 pm **MathFest Registration**

8:30 am – 9:20 am **Invited Address**
MAA-NAM David Blackwell Lecture
Cars, Faces, and Flowers 22.5 Degrees of Separation, What Can Matrix Factorization Tell You?
James H. Curry, University of Colorado

9:00 am – 5:00 pm **Exhibits and Book Sales**

9:00 am – 5:00 pm **Student Hospitality Center**

9:30 am – 10:20 am **Invited Address**
Hedrick Lecture Series
Rational Points on Modular Elliptic Curves
Lecture 1: Elliptic Curves
Henri Rene Darmon, McGill University

10:30 am – 11:20 am **Invited Address**
Computational Problems in Inferring Large Evolutionary Trees
Tandy J. Warnow, University of Texas at Austin

1:00 pm – 2:20 pm **MAA Session**
SUMMA Special Presentation
William A. Hawkins, Jr., MAA and the University of the District of Columbia

1:00 pm – 3:00 pm **Contributed Paper Session**
The Art/Science of Using Mathematics in Applications, Part 1
Kyle L. Riley, South Dakota School of Mines and Technology

1:00 pm – 3:00 pm **Contributed Paper Session**
Creative Use of Technology in Teaching Mathematics, Part 1
Mary L. Platt, Salem State College
Marcelle Bessman, Jacksonville University

1:00 pm – 3:00 pm **Contributed Paper Session**
Getting Students to Explore Concepts Through Writing in Mathematics
Sarah L. Mabrouck, Framingham State University

1:00 pm – 3:00 pm **Invited Paper Session**
Modeling the Environment
Ben Fusaro, Florida State University
Marty Walter, University of Colorado

1:00 pm – 3:00 pm **Minicourse #1: Part 1**
Bridging the Gap Between Mathematics and the Physical Sciences
Tevian Dray, Oregon State University

1:00 pm – 5:00 pm **Minicourse #2: Part 1**
Fair Enough? Mathematics of Equity
John C. Maceli and Stanely E. Seltzer, Ithaca College

1:00 pm – 5:00 pm **MAA Student Paper Sessions**

1:00 pm – 5:00 pm **PI MU EPSILON Paper Sessions**

3:15 pm – 5:15 pm **Contributed Paper Session**
Innovations in the Teaching of Calculus, Part 1
Howard Penn, US Naval Academy

3:15 pm – 5:15 pm **Contributed Paper Session**
Advances in Recreational Mathematics
Charles Ashbacher, Charles Ashbacher Technologies

3:15 pm – 5:15 pm **Contributed Paper Session**
E-Learning in Mathematics
Elias Deeba, University of Houston-Downtown
Ananda Gunawerdena, Carnegie-Mellon University

3:15 pm – 5:15 pm **General Contributed Paper Session, Part 1**
Frank Ford, Providence College

3:15 pm – 5:15 pm **Minicourse #3: Part 1**
A Dynamical Systems Approach to the
Differential Equations Course
Robert L. Devaney, Boston University

3:15 pm – 5:15 pm **Minicourse #4: Part 1**
Preparing Mathematicians to Educate Teachers
Patrick Callahan, University of California
and Jack Narayan, SUNY Oswego

5:15 pm – 6:30pm **MAA Mathematical Contest in Modeling (MCM) Winners**
Ben Fusaro, Florida State University

5:30 pm – 6:30 pm **Graduate Student Reception**

6:30 pm – 10:00 pm **Western Barbeque and Square Dance**

FRIDAY, AUGUST 1ST

8:00 am – 4:00 pm **MathFest Registration**

8:30 am – 9:20 am **MAA Invited Address**
Proofs That Really Count
Jennifer J. Quinn, Occidental College

9:00 am – 5:00 pm **Exhibits and Book Sales**

9:00 am – 5:00 pm **Student Hospitality Center**

9:30 am – 10:20 am **Invited Addresses**
Hedrick Lecture Series
Rational Points on Modular Elliptic Curves
Lecture 2: Modular Forms
Henri Rene Darmon, McGill University

10:30 am – 11:20 am **James R.C. Leitzel Lecture**
Mathematics' Response to Issues in Higher Education
Joan R. Leitzel, University of New Hampshire (Retired)

11:30 am – Noon **Awards Session**

1:00 pm – 2:20 pm **MAA Session**
Conversations on Mathematics and the Environment
Marty Walter, University of Colorado
Ben Fusaro, Florida State University

1:00 pm – 2:20 pm **MAA Session**
NCATE and the Mathematics Community
Judith Covington, LSU Shreveport
Marilyn Hala, NCTM

1:00 pm – 3:00 pm **MAA Contributed Paper Sessions**
Innovations in the Teaching of Calculus, Part 2
Howard Penn, US Naval Academy

1:00 pm – 3:00 pm Assessment of Student Learning in
Undergraduate Mathematics
Bill Marion, Valparaiso University
William Haver, Virginia Commonwealth University
Bernard Madison, University of Arkansas

1:00 pm – 3:00 pm Technology Innovations in Mathematics Education for
Elementary and Secondary Teachers, Part 1
Carol Vobach, University of Houston Downtown
Ron Barnes, University of Houston Downtown
Elias Deeba, University of Houston Downtown
John Hamman, Anne ArundelCommunity College
Kira Hamman, Hood College

1:00 pm – 3:00 pm **General Contributed Paper Session, Part 2**
Frank Ford, Providence College

1:00 pm– 3:00 pm **Minicourse #1: Part 2**
Bridging the Gap Between Mathematics
and the Physical Sciences
Tevian Dray, Oregon State University

1:00 pm – 3:00 pm **Minicourse #2: Part 2**
Fair Enough? Mathematics of Equity
John C. Maceli and Stanely E. Seltzer, Ithaca College

1:15 pm – 5:00 pm **MAA Student Paper Sessions**

1:15 pm – 5:00 pm **PI MU EPSILON Paper Sessions**

2:30 pm – 3:50 pm **MAA Session**
Directed Discussion in the Philosophy of Mathematics
Bonnie Gold, Monmouth University

2:30 pm – 5:00 pm **MAA Session**
WEBWORK: A Web Based Homework System
Michael G. Gage, University of Rochester
Arnold K. Pizer, University of Rochester
Vicki Roth, University of Rochester

3:15 pm – 5:15 pm **MAA Contributed Paper Session**
The Art/Science of Using Mathematics
in Applications, Part 2
Kyle L. Riley, South Dakota School of Mines and Technology

3:15 pm – 5:15 pm **Contributed Paper Session**
Creative Use of Technology in Teaching Mathematics, Part 2
Mary L. Platt, Salem State College
Marcelle Bessman, Jacksonville University

3:15 pm – 5:15 pm **Contributed Paper Session**
SIGMAA-RUME (Applying Research to Practice)
Anne Brown, Indiana University South Bend;
Marilyn Carlson, Arizona State University
Jim Cottrill, Illinois State University

Program AT A GLANCE

3:15 pm – 5:15 pm **Invited Paper Session**
Mathematics and the Visual Arts
Ralph A. Czerwinski, Millikin University

3:15 pm – 5:15 pm **Minicourse# 5: Part 1**
Small Graphs for Modeling Large Structures
Jack Graver, Syracuse University

3:15 pm – 5:15 pm **Minicourse# 6: Part 1**
Interactive Real-World Activities for Courses Below Calculus
Janet L. Anderson and Todd M. Swanson, Hope College

6:00 pm – 7:45 pm **PME Banquet**
See the MathFest Registration Form for ticket information.

8:00 pm – 8:50 pm **Invited Address**
PI MU EPSILON J. Sutherland Frame Lecture
Chaos Games and Fractal Images
Robert L. Devaney, Boston University

9:00 pm – 11:00 pm **AWM RECEPTION**

8:00 am – 2:00 pm **MathFest Registration**

8:30 am – 9:20 am **AWM-MAA Invited Address**
What I Learned in Forty Years in Beverly Hills 90210
Katherine P. Layton, Beverly Hills High School

9:00 am – 3:00 pm **Exhibits and Book Sales**

9:00 am – 3:00 pm **Student Hospitality Center**

9:30 am – 10:20 am **Hedrick Lecture Series**
Rational Points on Modular Elliptic Curves
Lecture 3: Complex Multiplication and Beyond
Henri Rene Darmon, McGill University

10:30 am – 11:20 am **MAA Invited Address**
Geometry of Departmental Discussions
Donald G. Saari, University of California at Irvine

11:30 am – Noon **MAA Business Meeting**

1:00 pm – 2:20 pm **MAA Session**
A Workshop on Student Writing - A Hands on Approach
Janet Andersen, Hope College
Annalisa Crannell, Franklin and Marshall College
Mary Ellen Foley, Louisiana State University at Shreveport
Thomas C. Ratliff, Wheaton College

1:00 pm – 2:20 pm **MAA Session**
What's New in College Alegbra and Precalculus Courses?
Sheldon P. Gordon, SUNY at Farmingdale

1:00 pm – 3:00 pm **Contributed Paper Sessions**
Innovative Approaches in Quantitative Literacy
Richard J. Maher, Loyola University Chicago

1:00 pm – 3:00 pm **Contributed Paper Sessions**
Innovations in Teaching Upper Division
Mathematics Courses
David Mazur, Western New England
College; Michael Axtell, Wabash College
Christa Coles, Elon University

1:00 pm – 3:00 pm **Minicourse #3: Part 2**
A Dynamical Systems Approach to the
Differential Equations Course
Robert L. Devaney, Boston University

1:00 pm – 3:00 pm **Minicourse #4: Part 2**
Preparing Mathematicians to Educate Teachers
Patrick Callahan, University of California
and Jack Narayan, SUNY Oswego

1:00 pm – 3:00 pm **Special Program**
A Nature Walk
Marty Walter, University of Colorado

1:15 pm – 2:00 pm **Special Sessions**
Math Horizons

2:10 pm – 3:50 pm **MAA Student Workshop**
Problems, Problems, Problems!
Clayton Dodge, University of Maine

2:30 pm – 4:15 pm **MAA Session**
Building Mathematics Education in a
Department of Mathematics
John D. Fulton, Clemson University

2:30 pm – 3:50 pm **MAA Session**
Applications of College Algebra
Scott Herriott, Maharishi University of Management

3:15 pm – 5:15 pm **Contributed Paper Session**
Technology Innovations in Mathematics Education for
Elementary and Secondary Teachers, Part 2
Carol Vobach, University of Houston Downtown
Ron Barnes, University of Houston Downtown
Elias Deeba, University of Houston Downtown
John Hamman, Anne Arundel Community College
Kira Hamman, Hood College

3:15 pm – 5:15 pm **General Contributed Paper Session, Part 3**
Frank Ford, Providence College

3:15 pm – 5:15 pm **Contributed Paper Session**
Innovations in Teaching Upper Division
Mathematics Courses, Part 2
David Mazur, Western New England
College; Michael Axtell, Wabash College
Christa Coles, Elon University

3:15 pm – 5:15 pm **Minicourse #5: Part 2**
Small Graphs for Modeling Large Structures
Jack Graver, Syracuse University

3:15 pm – 5:15 pm **Minicourse# 6: Part 2**
Interactive Real-World Activities for
Courses Below Calculus
Janet L. Anderson and Todd M. Swanson, Hope College

4:00 pm – 4:50 pm **MAA Student Lecture**
The Art of Mental Calculation
Art Benjamin, Harvey Mudd College

5:00 pm – 6:00 pm **Student Problem Solving Competition**
Richard Neal, University of Oklahoma

6:00 pm – 9:00 pm **MAA SILVER AND GOLD BANQUET**
Emcee, Ronald L. Graham
Speaker, Lynn Steen

Student Program AT A GLANCE

Wednesday, July 30th

5:30 pm – 6:30 pm MAA /PI MU EPSILON
Student Reception

Thursday, July 31st

9:00 am – 5:00 pm **Student Hospitality Center**

1:00 pm – 5:00 pm **MAA Student Paper Sessions**

1:00 pm – 5:00 pm **PI MU EPSILON Paper Sessions**

5:15 pm – 6:30pm **MAA Mathematical Contest in Modeling**
(MCM) Winners

5:30 pm – 6:30 pm **Graduate Student Reception**

Friday, August 1st

8:30 am – 9:20 am **MAA Invited Address**
Jennifer J. Quinn, Occidental College
Proofs That Really Count

9:00 am – 5:00 pm **Student Hospitality Center**

1:15 pm – 5:00 pm **MAA Student Paper Sessions**

1:15 pm – 5:00 pm **PI MU EPSILON Paper Sessions**

6:00 pm – 7:45 pm **PME Banquet**
See the MathFest Registration Form
for ticket information.

8:00 pm – 8:50 pm **Invited Address**
PI MU EPSILON J. Sutherland Frame Lecture
Chaos Games and Fractal Images
Robert L. Devaney, Boston University

Saturday, August 2nd

9:00 am – 3:00 pm **Student Hospitality Center**

1:15 pm – 2:00 pm **Special Sessions**
Math Horizons

2:00 pm – 3:50 pm **MAA Student Workshop**
Problems, Problems, Problems!

4:00 pm – 4:50 pm **MAA Student Lecture**
The Art of Mental Calculation

5:00 pm – 6:00 pm **Student Problem Solving Competition**

CALL FOR STUDENT PAPERS

Students who wish to present a paper at MathFest 2003 must be nominated by a faculty advisor familiar with the work to be presented. To propose a paper for presentation, the student must complete a form and obtain the signature of a faculty sponsor.

Nomination forms for the MAA Student Paper Sessions are located on MAA Online under STUDENTS, or can be obtained from Dr. Thomas Kelley via email tkelley@hfcc.net or by phone at (313) 845 - 6492.

PME student speakers must be nominated by their chapter advisors. Application forms for PME student speakers can be found on the PME web site http://www.pme math.org or can be obtained from the PME Secretary Treasurer, whose address is at that site.

Students who make presentations at the MAA Student Paper Session, and who are also members of the MAA, are eligible for partial transportation reimbursement. Students who make presentations at the Pi Mu Epsilon Student Paper Sessions, and who are also members of Pi Mu Epsilon, are eligible for partial transportation reimbursement and housing subsistence. The deadline for receipt of applications is June 27, 2003.

DELAWARE

GOLDEY-BEACOM COLLEGE
Wilmington, Delaware
Goldey-Beacom College announces the opening of a faculty position beginning August 2003. This position requires an earned doctorate in the designated area or a closely related field, proven excellence in teaching, experience with the integration of technology into the curriculum, business experience, and a commitment to continuous improvement. Responsibilities include teaching undergraduate and graduate level courses, developing curriculum, performing research, and other professional responsibilities generally expected of college faculty.

MATHEMATICS

TO APPLY: Send letter of interest, current vita, graduate transcripts, list of references including e-mail addresses, and summary of teaching evaluations to: Joyce E. Jones, Vice President for Academic Affairs, Goldey-Beacom College, 4701 Limestone Road, Wilmington, Delaware 19808.

GOLDEY-BEACOM COLLEGE IS AN EQUAL OPPPORTUNITY EMPLOYER

http://www.gbc.edu

MISSOURI

WILLIAM WOODS UNIVERSITY
Mathematics: Tenure-track, Assistant Professor, beginning August 2003 to teach a range of undergraduate courses. Other expectations include advising, committee work, student service, and scholarship. Qualifications: Ph.D. in hand, evidence of teaching excellence. WWU is an Equal Opportunity Employer. Women and minorities are encouraged to apply. Send letter, current vita, and list of references to: Dr. Betty Tutt; Vice President of Academic Affairs; William Woods University; One University Avenue; Fulton, MO 65251.

NEW YORK

SUNY FREDONIA
Department of Mathematics and Computer Science
Applications are invited for a one-year, full-time position in mathematics or mathematics education. Rank and salary will depend on experience. A Ph.D. (earned or expected) in mathematics or mathematics education required. Applicants from all specialty areas are welcome; currently, the department has particular needs in applied math and teacher preparation. The successful candidate will show evidence of excellence in teaching and potential for scholarly growth. A complete application will include: cover letter; curriculum vita; statement of teaching philosophy; research plan; transcripts of graduate work; and three letters of recommendation. Send to Joseph Straight, Chair, Department of Mathematics and Computer Science, SUNY Fredonia, Fredonia, NY 14063. Review of applications will begin April 14 and will continue until the position is filled. For further information about the department, visit its website at www.cs.fredonia.edu. SUNY Fredonia is an affirmative action/equal opportunity employer. We actively seek and encourage applications from minorities, women, and people with disabilities.

TENNESSEE

TENNESSEE STATE UNIVERSITY
Assistant/Associate Professor of Mathematics (Tenure Track), available August, 2003. Ph.D. in Mathematics; preference given to candidates with specialization in mathematical statistics; 1-5 years full-time college teaching experience (5 years minimum for Associate Professor rank); Good oral and written communication skills; commitment to academic excellence and collegiality. Duties include: Teaching undergraduate and graduate courses in Mathematics; Advising students and assisting with student and public service projects in mathematics; and Engaging in research and proposal writing in mathematics. Salary Range: 40,000.00-50,000.00.

Please forward Resume and cover letter to:
Tennessee State University
Office of Human Resources
3500 John A. Merritt Blvd.
Nashville, TN 37209
www.tnstate.edu

TENNESSEE STATE UNIVERSITY
Assistant/Associate Professor of Mathematics (Tenure Track), available August, 2003. Ph.D. in Mathematics; area of specialization open; 1-5 years full-time college teaching experience (5 years minimum for Associate Professor rank); Good oral and written communication skills; commitment to academic excellence and collegiality. Duties include: Teaching undergraduate and graduate courses in Mathematics; Advising students and assisting with student and public service projects in mathematics; and Engaging in research and proposal writing in mathematics. Salary Range: 40,000.00-50,000.00.

Please forward Resume and cover letter to:
Tennessee State University
Office of Human Resources
3500 John A. Merritt Blvd.
Nashville, TN 37209
www.tnstate.edu