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FOCUS

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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.

MAA INVITED ADDRESS

CALCULUS TEXTS

Underwood Dudley
Florida State University
Thursday, August 4
8:30 am - 9:20 am

Calculus texts are important, and heavy. This talk will survey what has been in them since the first, L'Hospital's in 1696, what should be in them and what should not be in them. It ends with a moral conclusion.

HEDRICK LECTURER SERIES

CRYSTALS, TILINGS, AND PACKINGS

Jeffrey Lagarias
University of Michigan

Tilings and packings have been a perennial source of mathematics, motivated by crystallography, number theory, geometry, coding theory, and for their own sake. Two of Hilbert's 23 problems are related to such questions (No. 3 and No. 18). These lectures, each self-contained, treat three independent topics in this area.

LECTURE 1: MATHEMATICAL CRYSTALS AND QUASI CRYSTALS

Thursday, August 4, 9:30 am – 10:20 am

Quasicrystals, discovered in 1982, are materials having long range order evidenced by their X-ray diffraction patterns, but which exhibit symmetries impossible for any crystalline structure. Understanding the structure of such materials leads to many interesting mathematical questions, not all answered. Recent developments shed new light on the boundary between crystallinity and aperiodic order.

LECTURE 2: TILINGS WITH ONE TILE

Friday, August 5, 9:30 am – 10:20 am

The first part of Hilbert's 18th problem asked about tilings of space by congruent copies of a single tile (an "Einstein"). Many questions about such tiles and the structure of their allowed tilings remain unsolved, even in one dimension.

LECTURE 3: APOLLONIAN CIRCLE PACKINGS

Saturday, August 6, 9:30 am – 10:20 am

Arrangements of circles have been studied since antiquity. Apollonian circle packings are infinite arrangements of touching circles generated from an initial configuration of four mutually touching circles. The limit set of a packing (closure of tangency points) is one of the first studied fractals. Some Apollonian circle packings have an integral structure, involving both the radii and the centers of the circles. In this talk we discusse the structure of these packings and the source of these integrality properties.

MAA INVITED ADDRESS

GRAPHS, TREES, PEBBLES, AND ROBOTS

Ruth Haas, Smith College
Thursday, August 4
10:30 am – 11:20 am

The arboricity of a graph is the minimum number of spanning forests into which its edges can be partitioned. We discuss several old and new characterizations of this number and its variants, including a new method for finding this number through "pebbling" the graph. This work has application to determining if a graph is rigid and if not, what motions it allows. This in turn can be used to understand the motions of robots.

JAMES R.C. LEITZEL LECTURE

INCREASING THE NUMBER OF MATHEMATICS MAJORS: LESSONS LEARNED FROM WORKING WITH THE MINORITY COMMUNITY

William Yslas Vélez
University of Arizona
Friday, August 5
10:30 am – 11:20 am

In the late 1980s I began to increase the number of minorities surviving our first semester calculus course. My goal was very modest — help them pass this course. As I worked with these students my own ideas about the importance of calculus began to change. We all know that this course is the gateway to all scientific disciplines, but it is much more than this. It gives mathematicians the opportunity to entice students into the study of mathematics. Calculus should not be thought of as a service course for the university, it should be viewed as serving the intellectual needs of the student. My efforts to increase minority participation now focus on helping students understand the importance of including more mathematics in their undergraduate curriculum. When I talk to students in calculus, I try to convince them to take more mathematics, and

to become mathematics majors. This has resulted in a substantial increase in the number of minority mathematics majors in the department.

PI MU EPSILON J. SUTHERLAND FRAME LECTURE

PROOFS THAT REALLY COUNT: THE ART OF COMBINATORIAL PROOF

Arthur T. Benjamin
Harvey Mudd College
Friday, August 5
8:00 pm – 8:50 pm

Mathematics is the science of patterns, and mathematicians attempt to understand these patterns and discover new ones using various tools. In this talk, we demonstrate that many number patterns, even very complex ones, can be understood by simple counting arguments. You will enjoy the magic of Fibonacci numbers, Lucas numbers, continued fractions, and more. You can count on it! This talk is based on research with Professor Jennifer Quinn and many, many undergraduates.

MAA STUDENT LECTURE

LIGHTS, CAMERA, FREEZE!

Annalisa Crannell, Franklin & Marshall College
Marc Frantz, Indiana University
Saturday, August 6
3:00 pm – 3:50 pm

Director/Producer Stephen "Marc" Frantzberg teams up with the world-famous actress Annalisa Monalisa Cranberry to bring you the new blockbuster hit, Projection. Spanning the centuries between Renaissance perspective painting and modern cinematic special effects, Projection reveals the true secrets behind projecting a 3-dimensional world onto a 2-dimensional canvas (or movie screen). You'll laugh; you'll yawn; you'll cry; you'll reach the vanishing point. The movie includes a cast of thousands (or dozens, depending on how many people are in the audience).

MAA-NAM DAVID BLACKWELL LECTURE

MODELING THE PHARMACOKINETICS OF A CHEMICAL USED IN HOUSEHOLD CONSUMER PRODUCTS

Leona H. Clark, Bennett College for Women
Friday, August 5, 8:30 am – 9:20 am

Perfluorooctane sulfonate (PFOS), a member of a class of perfluorinated chemicals used in a variety of consumer products as oil, water, and grease repellants, has been shown to be toxic in laboratory animals. Because PFOS has been shown to be persistent and widely distributed in the environment and has been detected in the blood of fluorochemical workers and non-occupationally exposed humans, there have been growing concerns about its potential health risk to humans. The mathematical model to be presented describes the pharmacokinetics (absorption, distribution, metabolism, and elimination) of PFOS following oral exposure and provides a framework for dose-response analyses needed to help assess the risk that exposure to PFOS might have on human health and the environment.

AWM-MAA FALCONER LECTURE

TECHNIQUES FOR VISUALIZING FREQUENCY PATTERNS IN DNA

Fern Hunt
National Institute of Standards and Technology
Saturday, August 6
8:30 am – 9:20 am

Many biological properties of a DNA sequence can be deduced from the frequencies of its constituent nucleic acids A,C,G,T and the subsequences they form. We will discuss some statistical properties of DNA that are amenable to visual and graphic display. Two examples among others to be presented are a visual representation of rare or avoided subsequences and an extension of Chargraff's rule.

MAA INVITED ADDRESS

CANTOR AND SIERPINSKI, JULIA AND FATOU: CRAZY TOPOLOGY IN COMPLEX DYNAMICS

Robert L. Devaney
Boston University
Saturday, August 6
10:30 am – 11:20 am

In this talk we will describe some of the very interesting topological spaces that arise as the Julia sets of complex functions such as the exponential and various rational functions. We will see a number of examples of Cantor bouquets and necklaces, Sierpinski curves and gaskets, and indecomposable continua, all in the guise of the chaotic regimes for these complex dynamical systems. We will also observe how these objects change from one to the other as parameters are varied.

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.

DOUBLE BUBBLES IN S^n AND GAUSS SPACE

Frank Morgan, Williams College

Thursday, August 4, 1:00 pm – 4:00 pm

Members and alums of the Williams College NSF SMALL Undergraduate Research Geometry Group will report on the double bubble problem in the n-dimensional sphere S^n and Gauss space G^n. The double bubble problem asks for the least-area way to enclose and separate two given volumes. The general problem remains open in R^5, S^3, and G^2, although there are interesting partial results.

THE MANY BRANCHES OF DYNAMICAL SYSTEMS

Mario Martelli, Claremont-McKenna College

Thursday, August 4, 1:00 pm – 5:00 pm

Speakers include: John Milton, MD, Claremont McKenna College, "Delayed feedback at stability's edge"; Michael A. Jones and Diana Thomas, Montclair State University, "Nim: a finite shift register sequence"; Jim Cushing, University of Arizona, Tucson, "Chaos theory and experiments in population dynamics" ; Annalisa Crannell, Franklin & Marshall College, "Quasi-continuous dynamical systems", Hal Smith, Arizona State University, Tempe, "High dimensional dynamics of continuous and discrete systems reduced to low dimensional dynamics of mappings"; Bob Devaney, Boston University, "Rings and satellites around the McMullen domain"; Marc Chamberland, Grinnell College; "Dynamics of the degree six Landen transformation"; and Ami Radunskaya, Pomona College, "Stochastically self-limiting growth."

GEMS OF NUMBER THEORY

Arthur T. Benjamin, Harvey Mudd College
Ezra A. Brown, Virginia Polytechnic Institute & State University

Friday, August 5, 1:00 pm – 3:00 pm

Come listen to four exciting talks on a wide range of number theoretic topics. The session features talks by Jennifer Beineke, Western New England College, on "Great moments of the Riemann zeta function"; Edward Burger, Williams College, on "A rational approach to irrationality" (or "Diophantine approximation for the impatient"; Marc Chamberland, Grinnell College, on "The Collatz chameleon"; and Roger Nelsen, Lewis and Clark College, on "Some visual gems from elementary number theory."

GEMS IN APPLIED MATHEMATICS

Kay Somers, Moravian College

Friday, August 5, 3:15 pm – 5:45 pm

Talks in this session will address themes and threads in various areas of applied mathematics. Each speaker will present a favorite "gem" to help illustrate some of the breadth and scope of applications of mathematics. Speakers and the titles of their talks are: Dennis DeTurck, University of Pennsylvania, "What are you thinking? How eigenvalues can help"; Doug Ensley, Shippensburg University, "A recurring theme in discrete mathematics"; Betty Mayfield, Hood College, "The parabolic equation method in underwater acoustics"; Allan Rossman, California Polytechnic State University, "Choosing the best: decision-making under uncertainty"; and Kay Somers, Moravian College, "An integer programming problem: What pre-processing can do."

TEACHING COMBINATORIAL MATHEMATICS

Alan Tucker, SUNY at Stony Brook

Friday, August 5, 1:00 pm – 3:00 pm

The speakers will be David Bressoud, Macalester College, "Teaching combinatorics in a discrete math course," Richard Grassl, University of Northern Colorado, "Teaching combinatorics to math teachers"; Jack Graver, Syracuse University, "Thoughts on teaching combinatorics," and Alan Tucker, "How George Pólya taught me how to teach combinatorics."

INTERESTING TOPICS IN DIFFERENCE EQUATIONS

Sarah Mabrouk, Framingham State College

Friday, August 5, 3:15 pm – 5:15 pm

Speakers include Johnny Henderson, Baylor University and Paul W. Eloe, University of Dayton.

HISTORY AND PHILOSOPHY OF MATHEMATICS

Florence Fasanelli, AAAS
Alejandro Garciadiego
Universidad Nacional Autónoma de México

Saturday, August 6, 1:00 pm – 3:00 pm

Speakers will reflect on the philosophy behind their individual courses in mathematics, mathematics education and the history of mathematics and how the history of mathematics informs their teaching in a political world. Speakers include Janet Barnett, Colorado State University-Pueblo, and Charles Jones, Ball State University.

GRAPH THEORY IDEAS FOR UNDERGRADUATE RESEARCH

Aparna Higgins, University of Dayton

Saturday, August 6, 3:15 pm – 5:15 pm

This session will highlight some topics in graph theory that are intriguing to undergraduate researchers. The speakers, all of whom have successfully guided undergraduate students in research, will present the areas of graph labeling, Hamiltonian circuits in Cayley digraphs, pebbling and line graphs. The speakers have directed undergraduate research in intensive summer experiences and in year-long undergraduate thesis activities. The session will provide insight into what makes a topic in graph theory suitable for investigations by undergraduates, and will provide additional avenues of research. Speakers include Daniel Isaksen, Wayne State University, "Hamiltonian circuits in Cayley digraphs"; Zsuzsanna Szaniszlo, Valparaiso University, "Graceful, equitable, magic, and other attractive

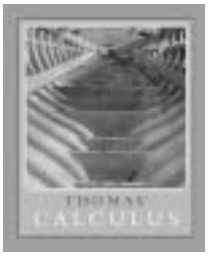
animals of the graph labeling zoo"; Aparna Higgins, University of Dayton, "Line graphs and pebbling"; Joseph A. Gallian, University of Minnesota at Duluth, "What makes a good graph theory problem for undergraduates?"

COOL APPLICATIONS OF COMPLEX ANALYSIS AT THE UNDERGRADUATE LEVEL

Michael A. Brilleslyper and Beth Schaubroeck
U. S. Air Force Academy
Saturday, August 6, 2:30 pm – 4:30 pm

Complex Analysis holds a central place in the undergraduate mathematics curriculum. It brings together and unifies diverse ideas from vector calculus, geometry, topology, and analysis. It has far-reaching applications to fields such as fluid dynamics and electrical engineering, as well as mathematical areas such as number theory. Advances in technology have allowed many difficult ideas in the field to be visualized and have allowed extremely involved calculations to be done with ease. This session explores four areas where the power of complex variables plays a central role in the key problems and their solutions. Speakers include Rich Stankewitz, Ball State University, "Chaos and real dynamics understood(?) through complex function theory"; Michael Dorff, Brigham Young University, "Some results about minimal surfaces by way of planar harmonic mappings and complex analysis", Ken Stephenson, University of Tennessee, "Pushing around analytic functions, circle by circle"; and Michael A. Brilleslyper, "Fluid flow and electric fields with all kinds of sources and sinks".

New Calculus and Higher-Level Math Titles from Addison-Wesley!



Thomas' Calculus 11e
Weir/Hass/Giordano
0-321-18558-7

Thomas' Calculus, Early Transcendentals, 11e
Weir/Hass/Giordano
0-321-19800-X

New!
This is the most comprehensive revision of **THOMAS' CALCULUS** ***in 25 years***, bringing back a full range of exercises in a clean, precise, and accurate text. The 11th edition of Thomas helps students apply the ideas of calculus in new and novel ways, first in the exercises, but ultimately, in their careers.

Linear Algebra and Its Applications, Update, 3/e
David C. Lay
0-321-28713-4

New! Available July 2005!
Lay introduces concepts early in a familiar, concrete, R^n setting, develops them gradually, and returns to them repeatedly throughout the text so that when discussed in the abstract, these concepts are more accessible to students.

New To The Update
- **New Chapters -** Chapter 8: The Geometry of Vector Spaces and Chapter 9: Optimization - are available on the Lay website and will also include selected solutions for instructors.
- Easily identifiable icons in the margins next to the Matlab examples and exercises.
- CD-Rom bound in the back of the book includes additional Matlab problems and programs, study guide, practice exams, data files and tool boxes to run programs.

www.aw-bc.com

PEARSON Addison Wesley

Contributed Paper SESSIONS

MAA Contributed Paper Sessions are normally organized around a predetermined topic. Information on how to submit an abstract can be found in this issue and at http://www.maa.org/meetings/cfp05.html.

USES OF THE WORLD-WIDE WEB THAT ENRICH AND PROMOTE LEARNING

Kirby A. Baker, UCLA
Roger Nelson, Ball State University
Thursday, August 4, 1:00 pm – 3:00 pm
Friday, August 5, 1:00 pm – 3:00 pm

This session seeks to highlight uses of the Web and its tools that engage students in the learning process. Tools such as course management systems, digital resources, tutorial systems, and hybrids that combine these functions on the Web can make a difference in student understanding and performance. Talks should demonstrate how these technologies are being integrated into the learning process. The audience will also be interested in some assessment of effectiveness. The session is sponsored by WEB SIGMAA and the MAA Committee on Technology in Mathematics Education (CTiME).

INNOVATIVE MATHEMATICS MAJORS IN SMALL/MEDIUM DEPARTMENTS

Mike Axtell, Wabash College
Crista Coles, Elon University
Sylvia Forman, St. Joseph's University
David Mazur, Western New England College
Thursday, August 4, 3:15 pm – 5:15 pm

This session seeks to highlight innovative undergraduate programs in mathematics offered by small- to medium-sized mathematics departments (i.e., 15 or fewer full-time positions in mathematics). The session will provide a forum where ideas concerning the entirety of the mathematics major(s) curriculum can be presented and explored. This is a timely topic in view of the recent release of the work done on the mathematics curriculum by the MAA's Committee on the Undergraduate Program in Mathematics (CUPM) and its subcommittee on Curriculum Renewal Across the First Two Years (CRAFTY). All talks should describe the structure of the major(s) as well as address the following issues: the desired outcomes of the program; the goals set for the major(s); and factors that make the program unique and effective Presenters will be asked to provide an electronic summary of both their requirements for the major and the reasoning behind it. This summary will be made available after MathFest over the web — possibly via the MAA website.

CURRENT ISSUES IN MATHEMATICS EDUCATION COURSES

Carol Vobach, University of Houston-Downtown
Thursday, August 4, 1:00 pm – 3:00 pm

This session invites papers dealing with issues in mathematics education courses for both pre-service and in-service teachers at the elementary, middle- and high-school levels. Topics might include: online courses or technology-based activities; new courses; courses for master of arts in teaching programs; assessment; interactions between local universities and school districts; acquiring grants to support mathematics education courses. It is hoped that presentations dealing with a wide range of topics in mathematics education will be offered.

ENVIRONMENTAL MATHEMATICS

Ben Fusaro, Florida State University
Bill Stone, New Mexico Institute of Mining & Technology
Thursday, August 4, 3:15 pm – 5:15 pm

We seek presentations that deal with all aspects of the pedagogy and the modeling of environmental problems suitable for undergraduate classes, including general education courses. Readers are invited to take up the challenge of searching the natural sciences, as well as economics, environmental science and environmental education for problems that can be clarified, extended or solved by undergraduate mathematics. We encourage contributions that emphasize computational, visual or qualitative approaches.

TEACHING AND LEARNING PROOF IN INQUIRY-BASED COURSES: INTEGRATING RESEARCH AND PRACTICE

Susan Hammond Marshall, Monmouth University
Jennifer Christian Smith, University of Texas at Austin
Friday, August 5, 1:00 pm – 3:00 pm

A growing body of evidence suggests that inquiry-based classroom environments, where the activity of the class centers around solving problems and discussing the solutions, are effective not only in helping students develop rich, connected understandings of mathematical concepts, but also in facilitating the development of strategies for justification, argumentation, and proof. Undergraduate mathematics courses are typically taught in traditional lecture-based formats and allow for very little discourse between students, or even between teacher and student. This is true for "transition" courses in which students are first introduced to formal proof as well as more abstract upper division courses. Inquiry-based teaching has been prevalent in mathematics courses for teachers for some time, but there is increased recognition that all students benefit from such modes of teaching.

In this session, we invite presenters to contribute papers focusing on 1) research on the effectiveness of inquiry-based teaching in courses emphasizing proof, or 2) issues related to the teaching of mathematical proof in inquiry-based courses. We hope this session will provide an opportunity for mathematics educators and mathematics education researchers to share results, information, and experiences and to begin building working relationships that will facilitate the integration of research results into practice.

NIFTY EXAMPLES IN DISCRETE MATHEMATICS

William Marion, Valparaiso University
Brian Hopkins, Saint Peter's College
Friday, August 5, 3:15 pm – 5:15 pm

Good examples are powerful tools for enhancing student understanding of the important connections between the mathematics introduced in discrete mathematics courses and fundamental ideas in computer science. This session invites papers which present examples to illustrate these connections. These examples should be presented in such a way that they can be used as a lecture example, an in-class assignment, a homework assignment or a project by instructors who teach discrete mathematics courses which meet the needs of computer science majors. Examples should be of a type which supplements the material in a standard text (or which presents a topic in a novel way). As a follow-up to this session, particularly interesting examples will be placed on a nifty examples website.

ALIGNING ASSESSMENT METHODS WITH LEARNING AND TEACHING IN COURSES FOR MAJORS

Donna Beers, Simmons College
Friday, August 5, 3:15 pm – 5:15 pm

Course assessments, like departmental program reviews, are ongoing and cyclical processes. The focus of this session is on assessment methods used in courses for mathematics majors that are at the sophomore level or higher. This session invites presenters to contribute to the scholarship of teaching by describing how they aligned their methods of assessment with learning outcomes and pedagogy in one upper-level course for majors given in the last three years. Presenters should describe their student profile and address these questions: What learning outcomes (knowledge, abilities, habits of mind, and ways of knowing) were stated in the course syllabus? What teaching methods and educational experiences or tasks were used to promote each of these learning outcomes? What methods of assessment (e.g., tests, portfolios, collaborative problem-solving, embedded problems, self-assessment and reflection tools, attitudinal or other surveys) were used to measure student achievement of the learning outcomes and why? How do you interpret the results of the assessment? What changes in the course design or assessment would you like to make for the future?

SIGMAA ON RUME CONTRIBUTED PAPER SESSION (RESEARCH-TO-PRACTICE)

William Martin, North Dakota State University
Barbara Edwards, Oregon State University
Saturday, August 6, 1:00 pm – 3:00 pm

The SIGMAA on RUME invites contributions that 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. Priority will be given to proposals that 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. Proposals should clearly describe the research and the classroom aspects of the presentation, as well as the relationship between them.

ADVANCES IN RECREATIONAL MATHEMATICS

Charles Ashbacher, Charles Ashbacher Technologies
Saturday, August 6, 1:00 pm – 5:15 pm

There have been many recent advances in recreational mathematics, some of which have involved the use of computers. This session is designed to give you an opportunity to explain your recent work in the field. While the organizer encourages submissions that involve computers, that is not essential for consideration. 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. For example, if the mathematics in the paper is commonly found in graduate programs, then it would generally be considered unacceptable. Supplemental computer programs can be written in any language, however they must be clean and WELL documented. Any source code used to create the paper must also be submitted for verification. Papers where existing programs such as Mathematica® were used will also be considered.

INNOVATIONS IN TEACHING DISCRETE MATHEMATICS

William E. Fenton, Bellarmine University
Nancy Hagelgans, Ursinus College
Saturday, August 6, 3:15 pm – 5:15 pm

Discrete mathematics is offered in many mathematics departments, at different levels, for different audiences, and with different expectations. This session seeks presentations on novel approaches to the teaching of discrete mathematics. These could be exploratory activities, application projects, interdisciplinary courses, etc. We particularly encourage presentations on the use of technology, as a teaching tool or as a source of interesting problems and applications. Evaluation of the pedagogy is welcome though not mandatory.

GENERAL CONTRIBUTED PAPER SESSION

Shawnee L. McMurran, California State University San Bernardino
Sarah L. Mabrouk, Framingham State College
Thursday, August 4, 1:00 pm – 5:00 pm
Friday, August 5, 1:00 pm – 5:00 pm
Saturday, August 6, 1:00 pm – 5:00 pm

Papers may be presented on any mathematically related topic. This session is designed for papers that do not fit into one of the other sessions. Papers that fit in into one of the other sessions should be sent to that organizer, not to this session.

Panels and Other SESSIONS

Speakers in the panel dicussions are selected and invited by the organizers for their expertise and accomplishments in the focal area of the session.

WORKSHOP ON TRAINING T.A.s

David Manderscheid, University of Iowa
Thursday, Noon to 2:20 pm
How are T.A. training sessions set up? What are the similarities and differences between such sessions? How can case studies be used to support T.A. training? How might T.A. training compare with preparing your faculty? These issues and others will be discussed. Participants should bring T.A. training materials they might have to this interactive workshop. Maria Terrell, Cornell University and Sol Friedberg, Boston College will moderate the session.

TOWN MEETING ON COLLEGE CALCULUS: RESPONDING TO CHANGING DEMOGRAPHICS

David Bressoud, Macalester College
Susan Ganter, Clemson University
Michael Starbird, University of Texas
Thursday, August 4, 1:00 pm – 2:20 pm
The number of students who take Calculus I in high school will soon surpass the number who take it in all 2- or 4-year colleges (see "The Changing Face of Calculus", FOCUS, Sept. & Nov. 2004). This has created a situation in which most of the students taking Calculus I in college are repeating a course that they took in high school and/or have arrived in college with mathematical deficiencies that must be addressed before or concurrently with their calculus class. At many institutions, the majority of students taking Calculus II have received credit for calculus taken in high school. The traditional college calculus sequence was not designed to serve any of these populations. The CUPM has formed a Task Force on College Calculus to supply the information that will help colleges and universities create calculus programs designed for the needs of their particular students. This will be a town meeting run by this task force, presenting what we know and soliciting suggestions for what is needed.

INNOVATIVE COLLEGE ALGEBRA COURSES IN THE USA

Denny Gulick, University of Maryland
Thursday, August 4, 1:00 pm – 2:20 pm
The Committee on Service Courses, of which I am chair, is scheduled to send a questionnaire to all (approximately 1800) MAA liaisons to obtain information about innovative college algebra courses. That should happen some time in February 2005. Results should be known a couple of months later. Intimately related to the issues related to innovative college algebra nationwide, there is expected to be a CRAFTY workshop during Summer 2005 in New Mexico on innovative approaches to college algebra courses. CRAFTY has expressed a desire for there to be a panel that discusses the findings of the questionnaire and the results of the workshop. Panelists include a member from the Committee, one CRAFTY summer workshop participant, and Denny Gulick. The session is sponsored by the MAA Committee on Service Courses.

MAA SECTION OFFICERS MEETING

Thursday, August 4, 2:30 pm – 5:00 pm
This meeting will be moderated by Nancy L. Hagelgans, Ursinus College, Chair of the MAA Committee on Sections.

LEAKS IN THE PIPELINE: WHERE OUR STUDENTS GO AND WHERE THEY DON'T

Sheldon P. Gordon, Farmingdale State University of New York
Thursday, August 4, 2:30 pm – 3:50 pm
There is a growing body of evidence based on long-term tracking of students that only a very small percentage of students who take college algebra and related courses ever go on to start calculus. Yet, at most schools, these courses were originally designed to prepare students for calculus. In this session, the panelists, representing a variety of different types of institutions will discuss the results of the studies they have conducted and the implications of those results. All of the panelists will track students forward from college algebra and/or precalculus forward to calculus and some of them will also track the students backward from calculus to discuss where they came from. Panelists include: Norma Agras, Miami-Dade Community College; Steve Dunbar, University of Nebraska; Robert Mayes, University of West Virginia; and William Weller, University of Houston-Downtown. The session is sponsored by the CUPM Subcommittee on Curriculum Renewal Across the First Two Years (CRAFY).

WHY OUR DEPARTMENTS ARE PROPOSING TO OFFER PILOT SECTIONS OF A MODELING BASED COLLEGE ALGEBRA COURSE

Bill Haver, Virginia Commonwealth University
Thursday, August 4, 2:30 pm – 3:50 pm
Eleven mathematics departments have sought support to offer pilot sections of a modeling based college algebra class to be offered at the same time as a number of control sections. The panel members will describe the questions that they have concerning their current college algebra offerings and what they hope to learn about the impact of offering the modeling course in terms of success rate, performance on common exams, performance in subsequent courses. The session is sponsored by the MAA committee Curriculum Renewal Across the First Two years (CRAFTY). Panelists include: Debra Geddings, University of South Carolina; Mary Ellen O'Leary, University of South Carolina; Donna Flint, South Dakota State University; Randall Wills, Southeastern Louisiana University; and Bill Haver.

MAA PRIZE SESSION

Friday, August 5, 11:30 am – Noon
This session will be moderated by Martha J. Siegel, Towson University, MAA Secretary.

HOW TO APPLY FOR JOBS

David Manderscheid, University of Iowa
Friday, August 5, 1:00 pm – 2:20 pm

This session is aimed at Ph.D. students and at recent Ph.D.s. An overview of the employment process will be given with ample opportunity for participants to ask questions. Questions that will be addressed include: How do you find which jobs are available? How do you choose which jobs you want to apply for? What are academic and other employers looking for in the materials that you send? What should you be doing now? How do schools conduct interviews? How can you best prepare for these interviews? How do employers choose whom they will make offers to? Panelists will include Sharon Clarke, Pepperdine University; James Freeman, Cornell College; David Manderscheid, University of Iowa; and John Vano, University of Wisconsin. The session is co-sponsored by the MAA Committee on Graduate Students and The Young Mathematicians Network.

EFFECTIVE SYSTEMATIC CHANGE IN THE UNIVERSITY: FIVE-YEAR RESULTS FROM NSF HOUSTON-LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION

Martin V. Bosangue, Cal State Fullerton
David E. Drew, The Claremont Graduate University
Friday, August 5, 1:00 pm – 2:20 pm

This session summarizes the activities and results of Phase I of the Houston-Louis Stokes Alliance for Minority Participation, 1999-2004. The original proposal for support under the Louis Stokes Alliance for Minority Participation Program focused on one primary goal, namely, to double the number of under-represented minority students receiving bachelor's degrees in science, technology, engineering, and mathematics (STEM) majors in five years.

The data for Phase I show that this ambitious goal has been nearly realized in the Houston project. Moreover, Phase I data show a marked increase in the number of H-LSAMP students who have gone on to advanced degrees over the past five years. In addition, there is an increase in the number of students successfully matriculating from the two-year colleges and making timely progress towards degree completion. These results also imply that participating institutions have developed and implemented successful approaches to supporting minority student achievement. This session includes presentations from AMP leaders who will discuss the successes and challenges of creating and maintaining a successful academic outreach program at both two-year and four-year institutions. Panelists include Richard Alo, University of Houston-Downtown; John Bear, University of Houston; Mahmoud Shagroni, Houston Community College; Richard Tapia, Rice University; and Bobby Wilson, Texas Southern University.

NATIONAL MATH VIEW: A LOOK AT STATE MATHEMATICAL STANDARDS

Johnny Lott, University of Montana
Friday, August 5, 2:30 pm – 3:50 pm

In July of 2004, seventy-four people representing the Association of State Supervisors of Mathematics, the National Council of Teachers of Mathematics, the Mathematical Association of America, and the American Mathematical Society met in Park City, Utah to examine state standards for similarities and differences in mathematics. In this discussion, representatives of this diverse group of reviewers will present their findings. In addition, panelists will discuss the implications of having separate and disparate standards for mathematics in classrooms across the United States. Panelists include: Jerry Dwyer, Texas Tech University, and a representative of the Association of State Supervisors of Mathematics. The MAA Committee on the Mathematical Education of Teachers will sponsor this.

CONVERSATIONS ABOUT MATHEMATICS AND THE ENVIRONMENT

Patricia Clark Kenschaft, Montclair State University
Friday, August 5, 3:00 pm – 4:20 pm

After two short introductory statements, there will be an opportunity for people to talk about environmental mathematics, to report their own ideas and actions, and/or to ask advice from the group. One of the introductory statements will be given by Stephanie Fitchett of Florida Atlantic University and co-PI of an NSF grant titled Discovery-Based Science and Mathematics in an Environmental Context.

MAA BUSINESS MEETING

Saturday, August 6, 11:30 am – Noon

This session will be moderated by Martha J. Siegel, Towson University, MAA Secretary.

A FRESH START FOR COLLEGIATE MATHEMATICS

Nancy Baxter Hastings, Dickinson College
Saturday, August 6, 1:00 pm – 2:20 pm

The MAA, in cooperation with AMATYC and NCTM, has launched a new initiative to refocus the courses below calculus to provide better mathematical experiences to all students, as called for in the new CUPM Curriculum Guide. This involves a greater emphasis on conceptual understanding and realistic applications via mathematical modeling in courses such as college algebra and precalculus.

As part of this movement, the MAA is publishing a collection of over 50 articles on different aspects of the issues. Some of the major themes include reforming college algebra, precalculus and related courses, research on student learning, the transition from high school to college, the needs of other disciplines, implications of technology, implementation issues, and

projects that work. In this presentation, editors of the volume will present overviews of the issues and the major points made by the authors. Panelists include Sheldon P. Gordon, Farmingdale State University of New York; Florence S. Gordon, New York Institute of Technology; and Nancy Baxter Hastings.

USING THE CUPM CURRICULUM GUIDE 2004

Cheryl Olsen, Shippensburg University

Saturday, August 6, 1:00 – 2:20 pm

Speakers will present their experiences using the 2004 CUPM Curriculum Guide to direct their department program review and to make alterations in their program. Speakers will address issues related to administrators' interaction, issues related to developing a capstone course, and the practicality. Speakers will be in various stages of the implementation process. The session is sponsored by the Committee on the Teaching of Undergraduate Mathematics (CTUM) and the Committee on the Undergraduate Program in Mathematics (CUPM)

AP CALCULUS WORKSHOP: FOCUSING ON THE FUNDAMENTAL THEOREM

Daniel Teague, North Carolina School of Science and Mathematics

Saturday, August 6, 1:00 – 2:50

This session is designed specifically for teachers of AP Calculus (both AB and BC) but will be of interest to all faculty teaching introductory Calculus. The session will present several approaches to teaching the fundamental theorem with a special focus on the role of theory in an introductory class. Applications of the fundamental theorem will also be considered. David Bressoud of Macalester College, and Lisa Townsley of Benedictine University are the panelists for this discussion .

PREPARING SUCCESSFUL TEAMS FOR MATHEMATICS COMPETITIONS

Steven R. Dunbar, University of Nebraska

Saturday, August 6, 3:15 pm – 5:15 pm

The Chairs of the American Mathematics Competitions contest writing committees will lead a workshop for teachers and mentors of math clubs and mathematics competition teams, sharing tips for preparing students for middle school and high school mathematics competitions. Award-winning teachers with high-scoring teams will also share their tips. Teachers will learn about topics that are important for contests that are not normally covered in the classroom. The goal of the workshop is to show middle-school and high-school teachers and math club and math circle leaders how to prepare students for mathematics competitions. The session will be moderated by Steven R. Dunbar. Panelists include: Elgin Johnston, Iowa State University; Bonnie Leitch, Alamo Heights School District, New Braunfels TX; Doug Faires, Youngstown State University; David Wells, Penn State University at New Kensington; and Steven Blasberg, West Valley Community College.

First Annual Meeting
National Numeracy Network
June 18-19, 2005
Macalester College
St. Paul, MN

The NNN envisions a society in which all citizens possess the power and habit of mind to search out quantitative information, critique it, reflect upon it, and apply it in their public, personal and professional lives. Program and registration information: http://www.math.dartmouth.edu/~nnn/

Graduate Student SESSIONS

MathFest provides an abundant variety of activities for graduate students. The sessions are designed to better prepare students for life in and after graduate school. Students will find the sessions informative, interesting, and richly rewarding.

GRADUATE STUDENT POSTER SESSION

John Vano, University of Wisconsin
Thursday, August 4, 3:00 pm – 5:00 pm
Graduate students are invited by the MAA Committee on Graduate Students and The Young Mathematicians Network to submit abstracts for the session. The poster size will be 48" (length) by 36" (height). Posters and materials for posting pages on the posters will be provided on-site. Applications should be submitted to John Vano, jvano@math.wisc.edu, by Tuesday, June 28, 2005.

GRADUATE STUDENT RECPTION

Thursday, August 4, 5:00 pm – 6:00 pm

HOW TO APPLY FOR JOBS

David Manderscheid, University of Iowa
Friday, August 5, 1:00 pm – 2:20 pm
See Panels and Other Sessions for more information.

NEGOTIATING WITH THE ADMINISTRATION

Jacqueline Jensen, Sam Houston State University
Kimber Tysdal, Hood College
Saturday, August 6, 1:00 pm – 2:20 pm
Panelists will discuss experiences that they have had in negotiating with department chairs or deans prior to, and sometimes after, employment. There will be plenty of time provided for questions from the audience.

THE FIRST YEAR EXPERIENCE AS A FACULTY MEMBER

Julie Jones, Sam Houston State University
Saturday, August 6, 2:30 pm – 3:50 pm
Want to know the real story behind the first year experience? Listen as panelists provide information on their personal experiences during their first year as a faculty member. Topics include the faculty as a role model; organizing and interacting with students in MAA student chapters; and balancing teaching, research, and service. There will also be a question and answer period.

Graduate Student Poster

Student ACTIVITIES

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 RECEPTION

Wednesday, August 3, 5:30 pm – 6:30 pm

Undergraduate student reception sponsored by the MAA and Pi Mu Epsilon.

STUDENT HOSPITALITY CENTER

Richard and Araceli Neal, American Society for the Communication of Mathematics

Thursday, August 4, 9:00 am – 5:00 pm
Friday, August 5, 9:00 am – 5:00 pm
Saturday, August 6, 9:00 am – 2:00 pm

The Student Hospitality Center (SHC) provides a place for students and other MathFest attendees to meet for informal conversation, refreshments, and mathematical diversions. The SHC also provides programs for the MAA and Pi Mu Epsilon student paper sessions, packets for the MAA students presenters, and information on MathFest activities of interest to students. Special information for students can be found on MAA Online at http://www.maa.org and http://www.pme-math.org.

MAA STUDENT PAPER SESSIONS

Edward C. Keppelmann, University of Nevada
Mary S. Hawkins, Prairie View A&M University
Thursday, August 4, 1:00 pm – 5:00 pm
Friday, August 5, 1:00 pm – 5:00 pm

PI MU EPSILON PAPER SESSIONS

J. Douglas Faires, Youngstown State University
Thursday, August 4, 1:00 pm – 5:00 pm
Friday, August 5, 1:00 pm – 5:00 pm

MATH HORIZONS SPECIAL SESSION

Arthur T. Benjamin, Harvey Mudd College
Jennifer J. Quinn, Occidental College

Thursday, August 4, 5:00 pm – 5:45 pm

Meet the editors of *Math Horizons*. It is the MAA's magazine for students, filled with intriguing articles, profiles, problems, humor, and contests. We are interested in your suggestions and we will be looking for students to join our Student Advisory Group.

PI MU EPSILON BANQUET

Sponsored by PME and MAA

Friday, August 5, 6:00 pm – 7:45 pm

All undergraduate students and their supporters are welcome. See the registration form for more information on this ticketed event.

PI MU EPSILON J. SUTHERLAND FRAME LECTURE PROOFS THAT REALLY COUNT: THE ART OF COMBINATORIAL PROOF

Arthur T. Benjamin, Harvey Mudd College

Friday, August 5, 8:00 pm – 8:50 pm

Mathematics is the science of patterns, and mathematicians attempt to understand these patterns and discover new ones using various tools. In this talk, we demonstrate that many number patterns, even very complex ones, can be understood by simple counting arguments. You will enjoy the magic of Fibonacci numbers, Lucas numbers, continued fractions, and more. You can count on it! This talk is based on research with Professor Jennifer Quinn and many, many undergraduates.

UNDERGRADUATE STUDENT ACTIVITIES SESSION WALKING ON LONG PATHS

John Harris, Furman University

Saturday, August 6, 1:00 pm – 2:50 pm

In this workshop several basic graph theory concepts will be presented, a few facts about paths will be described, and a few open problems will be shared. Student participants will work together to find examples that relate to the topics being discussed.

MAA STUDENT LECTURE LIGHTS, CAMERA, FREEZE!

Annalisa Crannell, Franklin & Marshall College
Marc Frantz, Indiana University

Saturday, August 6, 3:00 pm – 3:50 pm

See the Invited Address section for details.

STUDENT PROBLEM SOLVING COMPETITION

Richard Neal, American Society for the Communication of Mathematics

Saturday, August 6, 4:00 pm – 5:00 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 a runner up will be named.

MAA MATHEMATICAL CONTEST IN MODELING (MCM) WINNERS

Ben Fusaro, Florida State University

Saturday, August 6, 5:00 pm – 6:15 pm

About 450 teams, each consisting of three undergraduates, took part in the 2005 MCM in February. The contest consists of two real(istic) scenarios (one discrete, one continuous) that call for analysis and resolution. The teams have four days to deal with the challenge during which time they may use or consult anything inanimate — computers, libraries, the Web, etc. MAA judges choose one continuous and one discrete winner from the top contenders. The MAA subsidizes the teams' travel to MathFest, where they will present the results of their four-day challenge.

SIGMAA SESSIONS

SIGMAAs provide MAA members who share specific mathematical interests with opportunities to organize and interact professionally. Some of their activities include meetings, e-mail discussion lists, and facilitating research.

SIGMAA ON THE PHILOSOPY OF MATHEMATICS GUEST LECTURE AND BUSINESS MEETING

Bonnie Gold, Monmouth College
Friday, August 5, 1:00 pm – 2:50 pm
Reuben Hersh, University of New Mexico, will give a talk entitled, "Subversive Essays on the Nature of Mathematics." Quite a few people—mathematicians, philosophers, historians, cognitive scientists, sociologists, and others—have recently written interesting, provocative things about the nature of mathematics which the speaker has collected as part of a new anthology and will elaborate.

SIGMAA ON ENVIRONMENTAL MATHEMATICS CONVERSATIONS ABOUT MATHEMATICS AND THE ENVIRONMENT

Pat Kenschaft, Montclair State University
Friday, 3:00 pm – 4:20 pm
See Panels and Other Sessions for more details.

SIGMAA ON TEACHING ADVANCED HIGH SCHOOL MATHEMATICS

Dan Teague, North Carolina School of Science & Mathematics
Friday, August 5, 5:00 pm – 6:30 pm
SIGMAA TAHSM will hold its inaugural business meeting at MathFest 2005. We will have an open discussion with the membership on the desired activities of the SIGMAA at MAA and Sectional meetings, the content of the web-page, and areas of mutual concern that the SIGMAA could address. There will be a reception for SIGMAA members at the conclusion of the Business Meeting.

SIGMAA ON THE HISTORY OF MATHEMATICS COUNT HER IN! (A PLAY ABOUT WOMEN IN MATHEMATICS)

Joanne Peeples, El Paso Community College
Hamide Dogan, University of Texas at El Paso
Friday, August 5, 5:00 pm – 6:00 pm
This is a new experimental play about women mathematicians. It has been funded by a MAA Tensor Grant. There are six high school women, three undergraduate college women, three women graduate students, along with one playwright, and two college professors who have contributed to the play. Women have made significant contributions to mathematics over time, come and join us as we introduce you to seven of them — through the eyes of the high school students.

Women represented in the play include Hypatia, Sofia Kovalevskaya, Winifred Edgerton Merrill, Emmy Noether, Paris Pismis, Sarah Flannery, and Emilie du Chatelet and her granddaughter who will be portrayed by a muppet named after her great grandmother.

SIGMAA ENVIRONMENTAL MATHEMATICS ACTIVITIES

Ben Fusaro, Florida State University
Thursday, August 4, 3:15 pm – 4:15 pm
The Environmental Mathematics SIGMAA will sponsor several activities at MathFest 2005 in Albuquerque. There will be a Contributed Paper Session, *Environmental Mathematics* and also a Panel Discussion. As in the Boulder and Providence Mathfests, we will have an outdoor activity.

Rio Grande Nature Center
Saturday, August 6, 1:30 pm – 4:00 pm
This nearby NM state park is a restored section of a riparian woodland or bosque. Ponds provide wintering grounds for many migratory waterfowl, and many species are present year-round. There are trails that give visitors a chance to have a glimpse of the pre-Columbian Rio Grande. During our approximately two hours at the Nature Center we will participate in various activities such as Nature Study, Wildlife Viewing and a Nature Walk (or a hike, for the more vigorous).

Our conductor will be Bill Stone of the NM Institute of Mining & Technology. Bill is a mathematician, modeler and environmentalist. He has lived in this picturesque and geologically fascinating region for 20 years.

The total cost for this activity is $10. Our bus will leave the downtown area about 1:30 pm and return about 4:00 pm. (More specific times will be announced later.) This is an opportunity to have a unique Southwestern experience.

Make your reservations with MAA Program Assistant Hal Nesbitt HNesbitt@maa.org. Note: EM SIGMAA members got advance notice and a $5.00 discount. (Perhaps *you* should be thinking of joining EM SIGMAA!)

Ben Fusaro, EM SIGMAA Coordinator, fusaro@math.fsu.edu.

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
TEACHING A COURSE IN THE HISTORY OF MATHEMATICS

V. Frederick Rickey, U.S. Military Academy
Victor J. Katz, University of the District of Columbia
Part 1: Thursday, August 4, 1:00 pm – 3:00 pm
Part 2: Friday, August 5, 1:00 pm – 3:00 pm

Many schools are introducing courses in the history of mathematics and asking faculty who may never have taken such a course to teach them. This minicourse will assist those teaching history by introducing participants to numerous resources, discussing differing approaches and sample syllabi, providing suggestions for student projects and assessments, and giving those teaching such courses for the first time the confidence to master the subject themselves and to present the material to their students.

MINICOURSE #2
MATHEMATICAL FINANCE

Walter R. Stromquist, Bryn Mawr College
Part 1: Thursday, August 4, 1:00 pm – 3:00 pm
Part 2: Friday, August 5, 1:00 pm – 3:00 pm

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.

MINICOURSE #3
INFUSING CONNECTIONS INTO CORE COURSES FOR FUTURE SECONDARY TEACHERS

Steve R. Benson and Al Cuoco, Education Development Center; Karen J. Graham, University of New Hampshire
Neil Portnoy, Stony Brook University
Part 1: Thursday, August 4, 3:15 pm – 5:15 pm
Part 2: Saturday, August 6, 1:00 pm – 3:00 pm

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.

MINICOURSE #4
THE MATHEMATICS OF PRESIDENTIAL AND OTHER ELECTIONS

Steven J. Brams, New York University
Part 1: Thursday, August 4, 3:15 pm – 5:15 pm
Part 2: Saturday, August 6, 1:00 pm – 3:00 pm

This course will emphasize modeling presidential campaigns and elections and, more generally, the theoretical problems underlying voting and social choices. Topics will include modeling position-taking in two-candidate and multi-candidate races, bandwagon and underdog effects in primaries, voting power in the Electoral College, and election reforms like approval voting.

MINICOURSE #5
GEOMETRY WITH HISTORY FOR TEACHING TEACHERS

David W. Henderson, Cornell University
Daina Taimina, Cornell University
Part 1: Friday, August 5, 3:15 pm – 5:15 pm
Part 2: Saturday, August 6, 3:15 pm – 5:15 pm

This workshop will facilitate a hands-on cooperative experience of the geometries of various surfaces (cones, cylinders, spheres, and hyperbolic planes)— studying the intrinsic geometry of these surfaces. We will also explore the interactions (both ways) between geometry and mechanical motions. We will use four historical strands to organize our reflection on the basic geometric notions of Euclidean and non-Euclidean geometry. These explorations enhance our understandings of Euclidean geometry and help to demonstrate a non-axiomatic, non-formal view of mathematics and mathematics learning. Appropriate for all mathematicians teaching teachers. Teaching materials and references to web and paper resources will be provided.

MINICOURSE #6
CONTEMPORARY COLLEGE ALGEBRA: A REFOCUSED COLLEGE ALGEBRA COURSE

Laurette Foster, Prairie View A&M University
Dorothy Hunter, Huston-Tillotson College
Don Small, U.S. Military Academy
Part 1: Friday, August 5, 3:15 pm – 5:15 pm
Part 2: Saturday, August 6, 3:15 pm – 5:15 pm

This minicourse will take participants on a typical journey through a refocused college algebra program. The trip will include small group project presentations, graphing calculator required assignments, writing assignments, and assessment techniques. Participants will receive a collection of existing small group projects and will create at least one new small group project during the minicourse. Familiarity with a graphics calculator will be helpful but is not a prerequisite.

Extended Programs function as miniconferences. They are organized around relevant themes and are normally held in conjunction to MathFest. They normally precede or follow MathFest.

TWO-DAY SHORT COURSE

RECREATIONAL MATHEMATICS: A SHORT COURSE IN HONOR OF THE 300TH BIRTHDAY OF BENJAMIN FRANKLIN

Paul C. Pasles, Villanova University

Part 1: Tuesday: August 2, 9:00 am – 5:00 pm

Part 2, Wednesday, August 3, 9:00 am – 5:00 pm

Despite his limited formal education, Franklin was dedicated to learning and to facilitating the learning of others. As he famously opined, mathematical exercises with no direct application could still be valuable simply because they hone one's reasoning skills. This short course will focus on ways to use "fun" problems at all levels for the purpose of developing students' mathematical abilities. Paul C. Pasles will begin the course with a few opening remarks.

Lecture 1

Magic Square Magic

Art Benjamin, Harvey Mudd College

The mathemagician invites a member of the audience to join him onstage and to give him any number (typically a number between 50 and 100). The mathemagician then draws a blank 4-by-4 grid, and asks the volunteer to point to the 16 cells in any order. As each cell is pointed to, the mathemagician immediately writes a number in the cell. When the grid is full, the rows, columns, diagonals, and many other groups of 4, will sum to the spectator's number. This impressive feat of mathematical magic is very easy to do, as you will learn. Did you notice that my title is palindromic? All 3-by-3 magic squares have a beautiful, little-known property called "square-palindromicity." To illustrate, using the 3-by-3 magic square

4	9	2
3	5	7
8	1	6

you can verify that the sum of the squares of the 3-digit numbers given by the rows satisfy
$(492)^2 + (357)^2 + (816)^2 = (294)^2 + (753)^2 + (618)^2$. The same phenomenon occurs with the columns, and the (wrapped) diagonals. In fact, this property holds when the numbers are written in any base! Essentially this property holds for every 3-by-3 magic square (of any sum), and for a large class of n-by-n magic squares as well. These properties can be derived using elementary linear algebra. The proof was discovered with an undergraduate, Kan Yasuda, and was eventually published in the *American Mathematical Monthly*. Time permitting, I will also demonstrate and explain magical ways to "square" numbers.

Lecture 2

Dürer's Magic Squares, Cardano's Rings, Prince Rupert's Cubes, and Other Neat Things

Professor V. Frederick Rickey

United States

Military Academy

Recreational mathematics is as old as mathematics itself, so a survey of its history is out of the question. Instead we discuss a few neat things, setting each in its historical context and explaining their significance. As a benchmark for looking forward and back we shall take Charles Hutton's Recreations in Mathematics, which in turn is based on works of Ozanam and Montucla on recreational mathematics.

Lecture 4

Problem Solving Through Recreational Mathematics

Orin Chein, Temple University

My part of the program will be divided into two sessions. During the first session, at the end of Day 1, I will describe a course in recreational mathematics that we offer at Temple University, and introduce a variety of problems from the text. I will also perform some mathematical card and number tricks for participants to think about. On day two, we will discuss solutions to some of the problems as well as the mathematics behind some of the tricks.

Lecture 5

Over Thirty Years of Alphametics in the *Journal of Recreational Mathematics*

Charles Ashbacher

Editor, *Journal of Recreational Mathematics*

The alphametic, an arithmetic problem where letters represent digits and the letters also create a message, has been a staple problem in the *Journal of Recreational Mathematics* since the first issue was published. The messages are simple, such as the classic SEND+ MORE = MONEY. Solving them is usually an exercise in algebra in combination with trial and error. Solving an alphametic also makes an excellent programming assignment in beginning programming classes, in that they can be solved in a brute force manner by creating a set of nested loops. This presentation will be a demonstration of the various forms of the alphametic and how they are solved. The messages of the alphametics that have been published in the JRM over the years have covered a wide area. Everything from political statements to congratulations and condolences has been published as math problems. Some of the more interesting examples of this area of mathematics will also be given.

Lecture 6

How to Change Coins, M&M's, or Chicken Nuggets: The Linear Diophantine Problem of Frobenius

Matthias Beck, San Francisco State University

How many ways are there to change 42 cents? How many ways will there be when all the pennies are gone? How about if nickels were worth four cents? More generally, suppose we have coins of denominations $a_1, a_2, ..., a_d$. Can one find a formula for

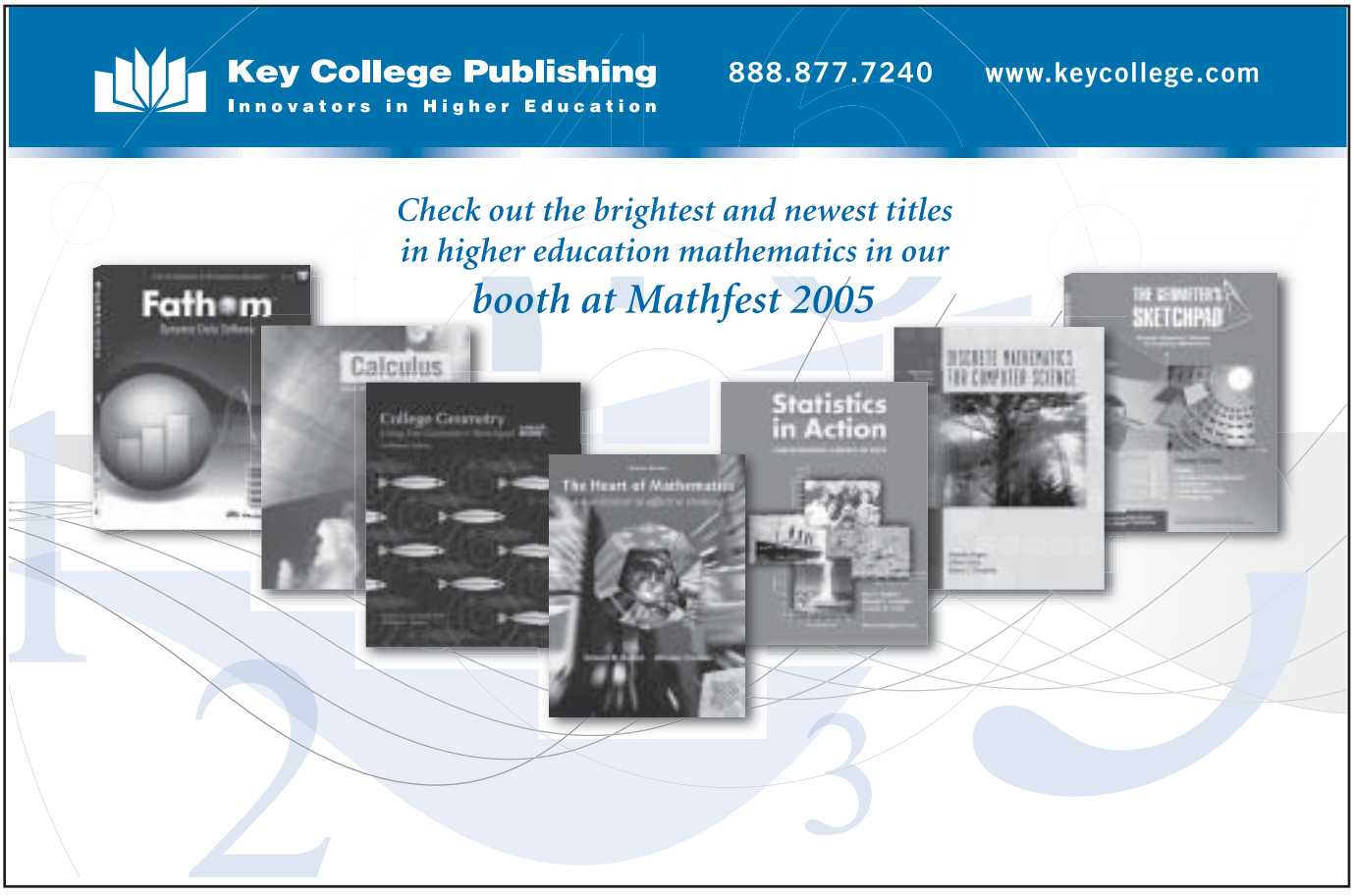
the number c(n) of ways to change n cents? A seemingly easier question is: can you change n cents, using only our coins? Depending on the culinary preference of the audience, we may state these questions in terms of bags of M&M's or boxes of Chicken Nuggets ("Can you buy Chicken Nuggets so that our 34 friends get exactly one each?"). We will see that if $a_1, a_2, ..., a_d$ do not have any common factors then we can be certain that we can change n, provided n is large enough. A natural task then is to find the largest integer that cannot be changed. This problem, often called the linear Diophantine problem of Frobenius, is solved in closed form for d = 2, in generating-function form for d=3, and wide open for d > 3. We will outline several elementary approaches to the d=2 case of this classical problem, including one that generalizes to d=3. These proofs are well suited for undergraduate classes in discrete mathematics, number theory, abstract algebra, combinatorics, or geometry. Going a step further, we will use the above counting function c(n) to recover and extend some well-known results on the Frobenius problem. En route we will discuss some basic number theory and discrete geometry connected to c(n). We will mention several open problems, some which are well suited for original undergraduate research projects.

Lecture 7

Magic Squares in the Twenty-First Century

Maya Mohsin Ahmed, University of California - Davis

The problem of constructing magic squares is of classical interest. Enumerating magic squares is a relatively new problem. I will describe how to construct and enumerate magic squares as lattice points inside polyhedral cones using techniques from algebraic combinatorics. I will also look at the correspondence of magic labelings of graphs and symmetric magic squares.



Exhibits

Exhibit Hall Information

Schedule time to browse through the new titles premiering this year in the Exhibit Hall. Shop for new publications and products and revisit your old favorites at the MathFest 2005 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.

Exhibit Hall Lunch Break
New and exciting in the Exhibit Hall this year is a hot buffet and salad bar, lounge area, email lab, and the Student Hospitality Center. You can take that needed break, pick up lunch, and check your email while visiting the Exhibit Hall.

Exhibit Hall Reception
Join us for a special reception sponsored by Addison-Wesley on Friday, August 5th.

LOCATION:
Albuquerque Convention Center
Ballroom A

EXHIBIT HOURS:

Thursday, August 4, 2005	**9:00 am – 5:00 pm**
Friday, August 5, 2005	**9:00 am – 5:00 pm**
Saturday, August 6, 2005	**9:00 am – 2:00 pm**

Exhibitors

A K Peters, Ltd.

Addison-Wesley Sponsor

American Mathematical Society

American Mathematics Competitions

AWM Book Display

Birkhauser Boston, Inc.

Brooks/Cole, Thomson

Cambridge University Press

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Hawkes Learning Systems

Key College Publishing Sponsor

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Mathematical Associations of America (Publications)

Mathematical Association of America (Membership)

Mathematics Throughout the Curriculum

Navajo Jewelry & Crafts

Prentice Hall

Springer-Verlag New York, Inc.

W.H. Freeman & Company

Wiley

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 2005-2006 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/.

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 15, 2005. 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/).

Participation in the Project NExT workshop at MathFest 2005 is restricted to those who applied and were selected as Project NExT Fellows. Those chosen as 2005-06 Fellows will receive notification and an invitation to participate in the program.

Project NExT Workshop for 2004-2005 and 2005-2006 Fellows

Monday, August 1	1:30 pm – 9:00 pm (for 2005-06 Fellows)
Tuesday, August 2	8:30 am – 5:25 pm (for 2005-06 Fellows)
Wednesday, August 3	8:15 am – 5:45 pm (for 2004-05 and 2005-06 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 a variety of introductory and advanced courses;
- Effective strategies for incorporating mathematical modeling into the curriculum;
- Using writing and reading to teach mathematics;
- 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 2006 Joint Mathematics Meetings, and a one-day workshop and the MAA MathFest in the summer of 2006. There is no fee for participation in Project NExT itself, and the 2005-06 Fellows will be provided with room and board at the Project NExT Workshop in Albuquerque.

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 National Council of Teachers of Mathematics, Texas Instruments, The Association of Mathematics Teacher Educators, The Association for Symbolic Logic, 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.

SANTA FE SCENIC TOUR & SHOPPING EXTRAVAGANZA

Wednesday, August 3, 9:00 am – 4:00 pm

The historic Turquoise Trail National Scenic Byway links Albuquerque and Santa Fe and encompasses 15,000 square miles in the heart of central New Mexico. You will drive back into history through the mining towns of Golden, Madrid, and Cerrillos, whose mines once yielded gold, silver, lead, zinc, and turquoise. During its heyday in the 1880s Cerrillos boasted twenty-one saloons and four hotels. A renewed spirit has brought art, crafts, theater, music, museums, and restaurants to these towns.

Upon arrival in Santa Fe you may take an optional guided walking tour, visiting such points of interest as the historic Plaza, St. Francis Cathedral, the Loretto Chapel, with its famous "miraculous" staircase, and the San Miguel Mission. Founded in 1610, Santa Fe was the last stop on the *Camino Real*, the fabled Royal Road that stretched from Mexico City to the northernmost reaches of the Spanish Empire. Today it is the heart and soul of the Southwest, and "Santa Fe Style" is synonymous with all the best the region has to offer. Its historic Plaza, winding streets, covered arcades, hidden gardens and courtyards, and Pueblo-style architecture reflect the blending of Indian, Hispanic, and Anglo cultures.

Lunch will be at on your own at one of the many restaurants near the Plaza. Your guide will provide maps and offer suggestions. After lunch you may continue to explore on your own or indulge in a southwestern shopping spree at the many unique specialty stores and galleries around the Plaza. Nearly all the city's main cultural attractions are also within walking distance of the Plaza, including the Georgia O'Keeffe Museum and the Palace of the Governors. **PRICE PER PERSON: $46.00.**

OPENING RECEPTION

Wednesday, August 3, 6:30 pm – 7:30 pm

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

OPENING BANQUET

Wednesday, August 3, 7:30 pm – 9:30 pm

Master of Ceremonies: Annalisa Crannell of Franklin and Marshall College. Continue the exciting evening by joining new and long-time friends and colleagues for a dinner of Blue Corn Encrusted Chicken with Salsa ($30) or Sliced Roast Strip Loin of Beef ($35). (A vegetarian substitution meal is available.) There will be an after-dinner presentation by Joe Gallian, University of Minnesota-Duluth, entitled "Groups, Graphs, and Escher Designs." Joe will explain how group theory and graph theory can be used to create Escher-like designs in the hyperbolic plane. Tickets are available **ONLY** through advance registration.

LOS AMIGOS ROUNDUP

Thursday, August 4, 5:30 pm – 9:00 pm

A Southwestern banquet located in the Rio Grand Bosque among giant 150-year-old Cottonwood trees. Experience a unique setting indoors in the Banquet Barn as well as an outdoor patio. Enjoy the all-you-can-eat ranch barbecue including hickory grilled prime steak and boneless chicken breast, green chili stew with chuck wagon biscuits, potato salad, ranch beans, and fudge brownies. Dinner includes beer, wine, margaritas, and assorted sodas.

Performances by an Indian dance troupe and a Mexican dance troupe will highlight the evening. A Tex-Mex band will also entertain you throughout the evening.

A bus will transport you from the Hyatt beginning at 5:30 pm.The ride to the Rio Grand Bosque is 20 minutes. Return trips will be made as buses fill. Tickets are **$35** each and can be purchased in advance using the registration form or through online registration. Don't miss out on an exciting evening that you will never forget!

EXHIBIT HALL RECEPTION

Friday, August 5, 3:00 pm – 4:30 pm

Visit the exhibit hall for a complimentary food and beverage reception sponsored by Addison-Wesley.

PME STUDENT BANQUET

Friday, August 5, 6:00 pm – 7:45 pm

Tickets are $20 for undergraduate students or students presenting in the PME and MAA Student Paper Sessions; and $30 for all others. Purchasing tickets through advance registration is recommended, since only a limited number of tickets will be available for sale onsite.

After the banquet, at 8:00 pm, attend the popular PME/J. Sutherland Frame Lecture, "Proofs That Really Count: The Art of Combinatorial Proof" presented by Arthur T. Benjamin, Harvey Mudd College.

AWM RECEPTION

Friday, August 5, 9:00 pm – 11:00 pm

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

SILVER AND GOLD RECEPTION AND BANQUET

Saturday, August 6, 6:00 pm – 9:00 pm

At this annual banquet the MAA recognizes individuals who have been long-time members of the Association, with special honors for 25-and 50-year members. All members are welcome to attend. The emcee will be Tina Straley, MAA Executive Di-

rector. Alan Tucker of SUNY Stony Brook will speak on "The Mathematical Basis of 'Standards-based' Tests: It Makes Cold Fusion Look Respectable." Alan will recount his experience with his investigations of item response theory he undertook in connection with a massive failure of the New York mathematics graduation test in June 2003.

There will be a cash bar reception beginning at 6:00 pm with the banquet following at 6:30 pm. There are three menu choices: Garlic Roasted Pork Loin ($29); an 8 oz. NY Strip Steak ($36); or a vegetarian substitution meal ($29). Purchasing tickets through advanced registration is recommended, since only a limited number of tickets will be available for sale onsite.

HOT AIR BALLOONING

Balloon rides are one of the main attractions in Albuquerque, NM and are available any day, weather permitting. These rides depart early in the morning and airtime is about one hour.The ride takes you over the Rio Grande River and the Sandia Mountain Range. Upon landing you are welcomed with a champagne toast, continental breakfast, and a flight certificate to commenorate your flight. If you would like to experience a balloon ride and see the unique beauty of Albuquerque, contact Destination Southwest at 505-766-9068 for more information.

SUBMISSION PROCEDURES FOR CONTRIBUTED PAPER PROPOSALS

To submit an abstract for MathFest 2005, go to http://abstracts.maa.org. The instructions should be straightforward. You will have the option to save a draft of your abstract and return later to edit/complete and submit it, or submit it immediately. Once the abstract has been submitted, you will not be able to edit it later, but you will be able to log into the site at any time to preview your submitted abstract. The MAA will publish abstracts for the talks in the contributed paper sessions.

An abstract should not be submitted to more than one session. If your paper cannot be accommodated in the session it was submitted, unless you indicate otherwise, it will be automatically considered for the general contributed paper session. In scheduling talks in the general contributed paper session, preference will be given to authors who have not had a paper accepted in another session. Speakers will be limited to at most one presentation in any given session and to at most two contributed paper presentations over all. Abstracts must reach the MAA by Tuesday, June 7, 2005. Early submissions are encouraged.

SANTA FE SCENIC TOUR & SHOPPING EXTRAVAGANZA!

WEDNESDAY, AUGUST 3RD, 9:00AM – 4:00PM

The historic Turquoise Trail National Scenic Byway links Albuquerque and Santa Fe and encompasses 15,000 square miles in the heart of central New Mexico. You will drive back into history through the mining towns of Golden, Madrid, and Cerrillos, whose mines once yielded gold, silver, lead, zinc, and turquoise. During its heyday in the 1880s Cerrillos boasted twenty-one saloons and four hotels. A renewed spirit has brought art, crafts, theater, music, museums, and restaurants to these towns.

Upon arrival in Santa Fe you may take an optional guided walking tour, visiting such points of interest as the historic Plaza, St. Francis Cathedral, the Loretto Chapel, with its famous "miraculous" staircase, and the San Miguel Mission. Founded in 1610, Santa Fe was the last stop on the Camino Real, the fabled Royal Road that stretched from Mexico City to the northernmost reaches of the Spanish Empire. Today it is the heart and soul of the Southwest, and "Santa Fe Style" is synonymous with all the best the region has to offer. Its historic Plaza, winding streets, covered arcades, hidden gardens and courtyards, and Pueblo-style architecture reflect the blending of Indian, Hispanic, and Anglo cultures.

Lunch will be at on your own at one of the many restaurants near the Plaza. Your guide will provide maps and offer suggestions. After lunch you may continue to explore on your own or indulge in a southwestern shopping spree at the many unique specialty stores and galleries around the Plaza. Nearly all the city's main cultural attractions are also within walking distance of the Plaza, including the Georgia O'Keeffe Museum and the Palace of the Governors.

Price per Person: $46.00

REGISTRATION INFORMATION

REGISTRATION DESK:

The registration desk will be located on the upper level of the Albuquerque Convention Center outside Ballroom A. It will be open Wednesday, August 3 from noon to 7:00 p.m., Thursday, August 4 and Friday, August 5 from 8:00 a.m. to 4:00 p.m., and Saturday, August 6 from 8:00 a.m. to 2:00 p.m. You may pick up your registration materials, register on-site, and purchase event tickets, when available, at this location.

REGISTRATION FEES

	By 6/20	After 6/20
Member Registration fee	$190	$245
Nonmember	$275	$350
Grad Student	$ 40	$ 50
Undergraduate Student	$ 25	$ 30
Unemployed	$ 40	$ 50
Individual from a Developing Country	$ 40	$ 50
K-12 Teacher	$ 40	$ 50
Emeritus member	$ 40	$ 50
One-day T F S	$ 99	$ 99
High School Student	$ 10	$ 10
Guest	$ 15	$ 15
Minicourses	$ 60	$ 70
Short Course		
MAA or AMS Member and MathFest Participant	$135	$150
NonMember or MathFest NonParticipant	$185	$200
Students	$ 50	$ 60

EARLY BIRD REGISTRATION:

Register by June 20 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 11th and there will be no need to come to the registration desk once you arrive.

REGULAR REGISTRATION:

Advance Registration/Housing Forms received between June 20th and before July 25th will be processed at the onsite registration rate. Participants registering during this period must pick up their registration packets onsite at the registration desk. Housing is also provided through the MAA Meetings Department. After July 25th, participants must register on-site at the registration desk.

ONLINE REGISTRATION:

Register on the Internet for MathFest, university housing, and reservations at the Hyatt Regency Albuquerque. Go to http://www.maa.org and click on "MathFest 2005". Credit card payment is required for Internet registration. MasterCard and Visa are accepted.

MATHFEST CANCELLATIONS:

MathFest cancellations must be received by August 1 to receive a 50% refund for registration. If your registration packet was mailed before your cancellation, you must return your badge to the MAA/MathFest, 1529 18th Street, NW, Washington, DC, 20036, to receive your refund.

MINICOURSE/SHORT COURSE REGISTRATION:

Advance Registration/Housing Forms must be received by July 25. 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, mini-course and/or short course cancellations must be received by July 15 to receive a 50% refund.

PAYMENT

The MAA will coordinate housing for MathFest. Make checks payable to the MAA. Checks drawn on foreign banks must be in equivalent foreign currency at current exchange rates. Mail/fax form to:

The Mathematical Association of America
1529 18th Street, NW
Washington, DC 20036
Fax: 202-387-0162

Questions/Changes on Registration and Housing:

1-800-741-9415, ext. 448 or 474
Email: blane@maa.org

UNIVERSITY HOUSING

The university is approximately a 10 minute ride from the Hyatt Regency Albuquerque and the Albuquerque Convention Center. Shuttle service will be provided between the university and the Hyatt Regency and the Albuquerque Convention Center. Dormitory rooms do not have private bathrooms; instead shared facilities are located on each floor. Floors are designated by gender and may not be appropriate for everyone. All dormitory rooms are non-smoking. The dormitories are not suitable for children. A campus dining facility is available for breakfast and dinner.

Hokana Hall Dormitory

Air conditioned housing is available in single/double residence hall rooms in Hokana Hall, which is the shape of a pentagon with a grass courtyard in the middle. This building is wheelchair accessible. Each room is equipped with an overhead light, one or two single-sized bed(s), pillow, a desk and chair, a floor lamp, a dresser, a bookcase, and a closet. The rooms are air conditioned and each has individual cooling controls. Bathrooms are located on each floor. They have four sinks, stalls, and showers and are cleaned daily. Rooms are made up with linen, pillow and case, blanket, and two towels. There will not be a daily towel exchange.

Participants should bring an alarm clock and extra towels. Campus and local telephone service is provided at no charge. For long-distance service, participants must use a credit card or calling card. Coin-operated laundry facilities are located in the basement. Irons are not available.

Check-In

Check-in at Hokana Hall front desk is from 7:00 am to 11:00 pm daily. The front desk provides many services, including information, change, messages, mail, directions, and more. After-hours check-in is at the Student Residence Center (SRC) in Building 88, approximately a 5 minute walk form Hokana Hall. The SRC is open 24 hours a day. There is an Automatic Teller Machine (ATM) in the SRC building available for your use, as well as a postage machine that includes envelopes and postcards. The C-Store, a Seven-Eleven type store, is also located in the SRC.

Telephones

The phones in each room can be used to make free on-campus calls and local calls only. No long distance phone calls may be made from your room unless you call collect or use a calling card.

Internet Access

Internet access in the dorms is available without charge for participants bringing their own computers. Using the dorm Ethernet taps, participants will be able to connect to the internet with applications such as Internet Explorer or Netscape.

In order to connect to the Internet, participants will need an Ethernet adapter installed on their personal computer and a standard Ethernet cable (10 Base-T Category 5). The university network has been tested to support Farallon adapters for Macs and 3Com adapters for Windows PCs. Other Ethernet adapters may not work on the university network.

Reservations

Cost per person occupying a bed is $30 per single, $24 per double. The maximum number of persons in a room is two. Residence hall accommodations are not suitable for children. Halls are gender designated due to the shared hall bathroom facilities. 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 1st through August 7th.

To reserve university housing, please send a completed Housing Form to The Mathematical Association of America's Meeting Department (MAA) or online at http://www.maa.org/mathfest. All completed forms must be received by 4:00 p.m. on July 21. Changes may be accepted by the MAA until 4:00 p.m. on July 21. A 15% cancellation fee will be charged for all university housing cancellations made by July 21. Unfortunately, refunds for changes and cancellations of university housing after July 21st cannot be issued.

Dining

The Dining Hall for this meeting is La Posada. La Posada is located next to the residence halls. The breakfast hours are 7:00 am until 8:30 am. The lunch hours are 11:30 am to 1:00 pm and dinner from 5:00 pm to 6:30 pm. Prices are $5.85 inclusive for breakfast, $6.80 for lunch and $6.95 for dinner. Kosher meals are not offered. Participants pay for admission to the dining hall via credit card, debit card or cash. It is not necessary to purchase meal cards in advance.

Meals may be purchased at several eateries located within one to five blocks of the residence halls at the Student Union. Meals may also be purchased in the community surrounding the university. Please note that a shuttle will be provided from the residence halls to the Hyatt Regency Albuquerque and the ACC.

Parking

Parking is provided in a University owned lot behind Hokana Hall. Parking is $4.20 per car per day or $12.60 per week. Parking permits can be purchased at check in. Parking permits cannot be purchased through advance registration.

HOTEL INFORMATION

The Hyatt Regency Albuquerque is the headquarters hotel for MathFest. It is located adjacent to the Albuquerque Convention Center. Rooms may be reserved at the Hyatt Regency Albuquerque. The MAA has guaranteed sleeping rooms at the Hyatt. Please book your hotel reservation through the MAA. Thank You!

Headquarters Hotel

Reservations at the Hyatt Regency Albuquerque may be made through the MAA via the MathFest Registration/Housing Form or online at http://www.maa.org/mathfest. Reservations made with the hotel directly will be subject to a higher room rate. The MAA can process reservations and changes until 4:00 p.m. on July 8, 2004.

Reservations

All rates are subject to a 12% room and state tax. Any reservations cancelled less than 24 hours prior to arrival will be subject to a cancellation fee equal to one night's stay. Changes made to departure date after check-in will be subject to a charge of one night plus tax. Rooms will fill quickly at this property so participants are advised to reserve rooms as early as possible.

The Hyatt Regency Albuquerque (headquarters)

Across the street from the Albuquerque Convention Center
330 Tijeras NW
Albuquerque, NM 87102
$133.00 single/double
(Reservations through MAA only until July 8, 2004)

The Hyatt Regency is an environmentally friendly full service hotel located across the street from the Albuquerque Convention Center, with restaurants, a lounge, fitness center, outdoor pool, physically challenged and nonsmoking rooms available, rooms include full amenities including high speed Internet wireless (T-Mobile) for $9.99 per day or $6.00 per login (up to 60 minutes). A wireless lounge is also located in the lobby.

Parking

The following rates are for parking:

Hotel Guests: Self-parking is $11.00 per night with in/out privileges. Valet parking is $15.00 per night with in/out privileges. Non-Hotel Guests: Self-parking is $8.00 per day without in/out privileges.

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.

TRAVEL INFORMATION:

AIRLINE INFORMATION:

American Airlines is the official airline for MathFest 2005. To obtain a discounted fare on American Airlines make your reservations by calling 1-800-433-1790 between the hours of 8:00 am and 10:00 pm, Eastern Time. Please be sure to refer to American Airlines Meeting ID Number A5175AH.

The Albuquerque International Airport (ABQ) is the closest airport and is located approximately 15 minutes from the Hyatt Regency Albuquerque, Albuquerque Convention Center, and the University of New Mexico.

BY TRAIN: AMTRAK
(505) 842-9650
214 1st St SW, Albuquerque, NM
http://www.amtrak.com
The Albuquerque AMTRAK station is located just four blocks from the Hyatt Regency Albuquerque.

BY BUS: Greyhound Albuquerque
(505) 243-4435
300 2nd St SW, Albuquerque, NM
http://www.greyhound.com
The Albuquerque Greyhound station is located just three blocks form the Hyatt Regency Albuquerque.

DRIVING DIRECTIONS:

From Albuquerque International Airport (ABQ):

To: Hyatt Regency Albuquerque: I-25 North toward I-40/Downtown and Santa Fe. Take exit number 224B toward Dr. Martin Luther King Jr. Ave./Central Ave. Turn left onto Dr. Martin Luther King Jr. Ave. Make a left onto 6th Ave. Turn left onto Tijeras Ave. The Hyatt is on the right side of Tijeras Ave.

To: Hokana Hall, University of New Mexico: I-25 North toward I-40/Downtown and Santa Fe. Take exit number 224B toward Dr. Martin Luther King Jr. Ave./Central Ave. Turn right onto Dr. Martin Luther King Jr. Ave. Make a left onto Redondo Rd. Turn right onto Las Lomas Rd. At the stop sign, Las Lomas Rd. becomes Campus Blvd. The Hokana parking lot is your first entrance on the right after the stop sign.

To: Albuquerque Convention Center: I-25 North toward I-40/Downtown and Santa Fe. Take exit number 224B toward Dr. Martin Luther King Jr. Ave./Central Ave. Turn left onto Dr. Martin Luther King Jr. Ave. Albuquerque Convention Center parking structures are on the left side of Dr. Martin Luther King Ave.

CAR RENTAL INFORMATION:

Enterprise Rental Car is the official car rental company for MathFest 2005. When making your reservations you must use Enterprise Discount Number 3402880 for the discounted meeting rate. Rates are available from July 31, 2005 to August 8, 2005. Reservations can be made by telephone (800) 736-8222 or online at http://www.erac.com.

DAILY SHUTTLE INFORMATION:

A shuttle bus will be traveling between the University of New Mexico and the Albuquerque Convention Center and the Hyatt Regency Albuquerque. Buses will begin operating on Wednesday, August 3rd at 5:30 pm. They will depart from the Convention Center and the University simultaneously in 15 minutes intervals. Beginning on Thursday, August 4th, the shuttles will operate from 7:00 am to 11:30 pm.

Starting on August 3rd at 6:30 pm, the shuttle bus loop will include a stop at Old Town Albuquerque. Old Town has many authentic Indian retail shops and restaurants as well as several museums.

The schedule is being finalized and will be posted on http://www.maa.org/mathfest and in the program book. Please note that the University of New Mexico is approximately 5 miles from the Hyatt Regency and Convention Center. Walking is not recommended.

PUBLIC TRANSPORTATION:

ABQ Ride city bus service 505-243-7433 (243-RIDE)
Printable schedules are available at http://www.cabq.gov/transit.

Bus services from Albuquerque International Airport to downtown Alvarado Transit Center or University of New Mexico main campus: route #50. Buses run weekdays 7:00 am to 8:30 pm from the airport, and 7:00 am to 8:30 pm from the downtown transit center. Fare is $1 for adults, 35 cents for those 62 and older or mobility impaired, with picture ID required. Fare boxes accept coins and dollar bills; exact change is required.

Rapid Ride stations are situated every half-mile along Central Avenue, linking many points of interest in Albuquerque. Convention delegates can use Rapid Ride bus service to move between downtown Albuquerque and the UNM campus, as well as Nob Hill entertainment district and the Uptown shopping malls on Louisiana Boulevard. There is no printed schedule. The RR bus arrives every 10 minutes. Same fare structure. Rapid Ride operates Monday through Saturday, 6:00 am to 8:00 pm.

TAXI INFORMATION:

Airport Shuttle & Taxi Service

Sunport Shuttle Service offers on demand or scheduled shuttle services to and from the Albuquerque International Airport for $8.00 per person, one way. Tickets for the shuttle can be reserved in advance by calling 1-866-883-4966 or picked up at the airport shuttle counter located in the baggage claim area. There are regularly scheduled services between the Airport and downtown Albuquerque area hotels, the train station, University of New Mexico and the Convention Center. Taxi service is also available. The cost is approximately $14 from the airport to downtown.

These links are provided as a convenience:

New Mexico Department of Tourism
http://www.newmexico.org

City of Albuquerque
http://www.cabq.gov

Albuquerque International Balloon Fiesta
http://www.balloonfiesta.com

New Mexico State Parks
http:// www.nmparks.com

Sandia Peak Aerial Tramway by Jay Blackwood

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

The Mathematical Association of America's PRofessional Enhancement Program (PREP) enables faculty in the mathematical sciences to respond to rapid and significant developments that impact undergraduate mathematics. PREP workshops serve faculty in the mathematical sciences from all types of institutions, at all stages in their careers, and enable faculty to reach beyond their own educational experiences. Apply online at http://www.maa.org/prep/2005/.*PREP is a project of the MAA funded by NSF-DUE 0341481.*

2005 Professional Enhancement Program Workshops

Making the Math Visible: Explorations in College Geometry Using the Geometer's Sketchpad

With additional support from NSF Grant DUE-0338301
June 5 - 12, 2005 – Bellarmine University, Louisville, KY
Registration: $250
Application Deadline: April 12, 2005
Bill Fenton, Sr. Barbara Reynolds

Creating and Strengthening Interdisciplinary Programs in Quantititative Literacy

With additional support from US Department of Education FIPSE Grant P116B020918
June 14 - 18, 2005 – Macalester College, St. Paul, MN
Registration: $250
Application Deadline: April 19, 2005
David Bressoud

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

June 16 - 19, 2005 – Washington Terrace Hotel, Washington, DC
Registration: $900
Application Deadline: April 19, 2004
Arnie Ostebee, Jon Scott

Revitalizing Your Developmental Mathematics Course: A Context-Driven, Activity-Based Approach

June 20 - 24, 2005 – Foothills Conference Center, University of California-Berkeley, Berkeley, CA
Co-sponsored by Key College Publishing
Registration: $250
Application Deadline: April 26, 2005
Nancy Crisler, Gary Simundza

Undergraduate Topology: An Intuition-Based and Example-Driven Approach

June 20 - 25, 2005 – Wooded Glen Retreat and Conference Center, Henryville, IN
Registration: $250
Application Deadline: April 26, 2005
Steve Carlson

Interactive Internet-Based Multivariable Calculus

June 26 - 29, 2005 – Brown University, Providence, RI
Registration: $250
Application Deadline: May 3, 2005
Thomas Banchoff

Exploring Linear Algebra Using Maple

June 27 – July 1, 2005 – Online from Saint Louis University, Saint Louis, MO
Registration: $100
Application Deadline: May 3, 2005
Russell Blyth, Michael K. May

Post-Calculus Investigations of Statistical Concepts and Methods

Co-sponsored by Duxbury-Brooks/Cole, a part of Thomson Higher Education. With support from the American Statistical Association
July 18 – 22, 2005 – California Polytchnic State University, San Luis Obispo, CA
Registration: $250
Application Deadline: May 31, 2005
Allan Rossman, Beth Chance

Computational and Mathematical Biology

Offered in conjunction with the National Computational Science Institute workshop on Computational Biology for Biology Educators (http://www.computationalscience.org).
July 31 – August 6, 2005 – Harvey Mudd College, Claremont, CA
Registration: $300
Application Deadline: June 7, 2005
Eric Marland

PMET PREPARING MATHEMATICIANS TO EDUCATE TEACHERS

Concerned about future teachers' learning of mathematics?

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 Mathematical Association of America has developed a multifaceted program, Preparing Mathematicians to Educate Teachers (PMET).

During spring and summer 2005, PMET will offer eight new workshops for college and university faculty who teach mathematics courses taken by prospective teachers. Each workshop will focus on preparing teachers for elementary, middle and/or secondary school mathematics. Participants will examine how pre-service teachers learn mathematics, make sense of mathematical ideas, and how they integrate their knowledge of mathematics into their thinking about teaching. Participants will also have opportunities to share ideas, discuss, and learn more about appropriate content and effective ways of helping pre-service teachers learn mathematics. They will explore specific topics including the use of technology and statistics education in school mathematics.

Additional details and application materials are available at http://www.maa.org/PMET.

PMET WORKSHOPS SUMMER 2005

The PMET Workshop Program will have a total of 12 workshops in 2005.

PMET will offer the following new workshops in 2005.

PMET workshops for preparing elementary school teachers:
June 12-24 Kent State University, Kent, OH
Directors: Mike Battista & Olaf Stackelberg
Special Focus: Geometry and Rational Numbers

June 12-18 SUNY Oswego, Oswego, NY
Directors: Kathy Ivey & Jack Narayan
Special Focus: Mathematical Justification

July 17-29 Southwest Indian Polytechnic Institute, Albuquerque, NM
Directors: Joan Goodman & Bernie Madison
Special Focus: Ethnomathematics emphasizing Native American and Hispanic cultures

PMET workshop for preparing elementary/middle-school teachers:
June 5-12 Clark Atlanta University, Atlanta, GA
Directors: Barbara Ferguson & Sandra Rucker
Special Focus: Teaching in Diverse Urban Classrooms

PMET workshops for preparing secondary school teachers:
May 22-29 University of Alabama, Tuscaloosa, AL
Directors: Holly Hirst & David Royster
Special Focus: The Mathematics of High School

June 20-July 1 University of San Diego, San Diego, CA
Directors: Magnhild Lien & Perla Myers
Special Focus: Proof in Mathematics

July 10-16 Park City Mathematics Institute, Park City, UT
Directors: Patrick Callahan & William McCallum
Special Focus: Middle and High School Algebra

July 10-22 Texas Southern University, Houston, TX
Directors: Joan Evans & Kathy Ivey
Special Focus: Multiple Representations

The following workshops will be the second summer continuations of programs begun in 2004.

PMET workshop for preparing elementary school teachers:
June 20-26 Humboldt State University, Arcata, CA
Directors: Phyllis Chinn & Dale Oliver
This workshop is open to any participant of a previous PMET workshop for preparing elementary school teachers.

PMET workshops for preparing middle-school teachers:
June 5-12 North Carolina A&T, Greensboro, NC
Directors: Holly Hirst & David Royster

July 10-17 Bowling Green State University, Bowling Green, OH
Directors: Thomas Hern & Barbara Moses

PMET workshop for preparing secondary school teachers:
June 12-24 SUNY at Oswego, Oswego, NY
Directors: Jack Narayan & Steve West
Special Focus: Thinking about Mathematics Content

Costs of lodging and food while at the workshops are covered by the program.

Participants in PMET workshops will be encouraged to apply for a limited number of minigrants of $2,000-$5,000 to support continuing activities that further the program goals at their own institutions or in their local MAA section.

Some travel support is available to deal with special circumstances. For information, contact Ed Dubinsky at edd@math.kent.edu

Check the project website for further information, including workshop descriptions and applications: http://www.maa.org/PMET

Questions regarding the PMET workshops and minicourses may be addressed to Ed Dubinsky at edd@math.kent.edu

Major funding provided by the **National Science Foundation**

PMET is supported by the National Science Foundation grant DUE-0230847 with additional support from Texas Instruments.

PMET is part of the MAA PRofessional Enhancement Program (PREP)
http://www.maa.org/PREP

Program AT A GLANCE

MONDAY, AUGUST 1ST

11:00 am – 5:00 pm — **Project NExT Registration**

1:30 pm – 9:00 pm — **Project NExT Workshop**

TUESDAY, AUGUST 2ND

8:00 am – 3:00 pm — **Project NExT Registration**

8:30 am – 5:25 pm — **Project NExT Workshop**

9:00 am – 5:00 pm — **Extended Program**
Part 1: Two-Day Short Course
Recreational Mathematics: A Short Course in Honor of the 300th Birthday of Benjamin Franklin
Paul C. Pasles, Villanova University

WEDNESDAY, AUGUST 3RD

8:00 am – 3:00 pm — **Project NExT Registration**

8:15 am – 5:45 pm — **Project NExT Workshop**

9:00 am – 4:00 pm — **Santa Fe Scenic Tour & Shopping Extravaganza**

9:00 am – 5:00 pm — **Board of Governors Meeting**

9:00 am – 5:00 pm — **Extended Program**
Part 2: Two-Day Short Course
Recreational Mathematics: A Short Course in Honor of the 300th Birthday of Benjamin Franklin
Paul C. Pasles, Villanova University

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

5:30 pm – 6:30 pm — **MAA/PME Student Reception**

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

7:30 pm – 9:30 pm — **Opening Banquet**
Emcee, Annalisa Crannell, Franklin and Marshall College
Speaker, Joe Gallian, University of Minnesota-Duluth

THURSDAY, AUGUST 4TH

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

8:30 am – 9:20 am — **MAA Invited Address**
Calculus Texts
Underwood Dudley, Florida State University

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

9:00 am – 5:00 pm — **Email Lab**

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

9:30 am – 10:20 am — **Invited Address**
Hedrick Lecture Series
Crystals, Tilings, and Packings
Lecture 1: Mathematical Crystals and Quasi Crystals
Jeffrey Lagarias, University of Michigan

10:30 am – 11:20 am — **Invited Address**
Graphs, Trees, Pebbles, and Robots
Ruth Haas, Smith College

12:00 pm – 2:20 pm — **Panels and Other Sessions**
Workshop on Training T.A.s
David Manderscheid, University of Iowa

1:00 pm – 2:20 pm — **Panels and Other Sessions**
Town Meeting on College Calculus: Responding to Changing Demographics
David Bressoud, Macalester College
Susan Gantner, Clemson University
Michael Starbird, University of Texas

1:00 pm – 2:20 pm — **Panels and Other Sessions**
Innovative Algebra Courses in the USA
Denny Gulick, University of Maryland

1:00 pm – 3:00 pm — **Contributed Paper Session**
Uses of the World Wide Web that Enrich and Promote Learning
Kirby A. Baker, UCLA
Roger Nelson, Ball State University

1:00 pm – 3:00 pm — **Contributed Paper Session**
Current Issues in Mathematics Education Courses
Carol Vobach, University of Houston-Downtown

1:00 pm – 3:00 pm — **Minicourse #1**
Teaching a Course in the History of Mathematics
V. Frederick Rickey, U.S. Military Academy
Victor J. Katz, University of the District of Columbia

1:00 pm – 3:00 pm — **Minicourse #2**
Mathematical Finance
Walter R. Stromquist, Bryn Mawr College

1:00 pm – 4:00 pm — **Invited Paper Session**
Double Bubbles in S^n and Gauss Space
Frank Morgan, Williams College

THURSDAY, AUGUST 4TH continued

1:00 pm – 4:45 pm
General Contributed Paper Session
Shawnee L. McMurran, California State University, San Bernardino
Sarah L. Mabrouk, Framingham State College

1:00 pm – 5:00 pm
Invited Paper Session
The Many Branches of Dynamical Systems
Mario Martelli, Claremont-McKenna College

1:00 pm – 5:00 pm
MAA Student Paper Sessions
Edward C. Keppelmann, University of Nevada
Mary S. Hawkins, Prairie View A&M University

1:00 pm – 5:00 pm
Pi Mu Episilon Paper Sessions
J. Douglas Faires, Youngstown State University

2:30 pm – 3:50 pm
Panels and Other Sessions
Leaks in the Pipeline: Where Our Students Go and Where They Don't
Sheldon P. Gordon, Farmingdale State University of New York

2:30 pm – 3:50 pm
Panels and Other Sessions
Why Our Departments Are Proposing to Offer Pilot Sections of a Modeling Based College Algebra Course
Bill Haver, Virginia Commonwealth University

2:30 pm – 3:50 pm
MAA Section Officers Meeting

3:00 pm – 5:00 pm
Graduate Student Poster Sessions
John Vano, University of Wisconsin

3:15 pm – 5:15 pm
Contributed Paper Session
Innovative Mathematics Majors in Small/Medium Departments
Mike Axtell, Wabash College
Crista Coles, Elon University
Sylvia Forman, St. Joseph University
David Mazur, Western New England College

3:15 pm – 5:15 pm
Contributed Paper Session
Environmental Mathematics
Ben Fusaro, Florida State University
Bill Stone, New Mexico Institute of Mining and Technology

3:15 pm – 5:15 pm
Minicourse #3: Part 1
Infusing Connections into Core Courses for Future Secondary Teachers
Steven R. Benson and Al Cuoco, Education Development Center
Karen J. Graham, University of New Hampshire

3:15 pm – 5:15 pm
Minicourse #4: Part 1
The Mathematics of Presidential and Other Elections
Steven J. Brams, New York University

5:00 pm – 5:45 pm
Math Horizons Special Session
Arthur T. Benjamin, Harvey Mudd College
Jennifer J. Quinn, Occidental College

5:00 pm – 6:00 pm
Graduate Student Reception

5:30 pm – 9:00 pm
Los Amigos Roundup

FRIDAY, AUGUST 5TH

8:00 am – 4:00 pm
MathFest Registration

8:30 am – 9:20 am
MAA–NAM DAVID BLACKWELL Lecture
Modeling the Pharmacokinetics of a Chemical Used in Household Consumer Products
Leona H. Clark, Bennett College for Women

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

9:00 am – 5:00 pm
Email Lab

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

9:30 am – 10:20 am
Invited Addresses
Hedrick Lecture Series
Lecture 2: Tilings With One Tile
Jeffrey Lagarias, University of Michigan

10:30 am – 11:20 am
Invited Address
James R.C. Leitzel Lecture
Increasing the Number of Mathematics Majors: Lessons Learned from Working with the Minority Community
William Yslas Vélez, University of Arizona

11:30 am – Noon
MAA Prize Session

1:00 pm – 2:20 pm
Panels and Other Sessions
How to Apply for Jobs
David Manderscheid, University of Iowa

1:00 pm – 2:20 pm
Panels and Other Sessions
Effective Systematic Change in the University: Five-Year Results from NSF Houston-Louis Stokes Alliance for Minority Participation
Martin V. Bosangue, Cal State, Fullerton
David E. Drew, The Claremont Graduate University

FRIDAY, AUGUST 5TH continued

1:00 pm – 2:50 pm
SIGMAA on the Philosophy of Mathematics Guest Lecture and Business Meeting
Bonnie Gold, Monmouth University

1:00 pm – 3:00 pm
Invited Paper Session
Gems of Number Theory
Arthur T. Benjamin, Harvey Mudd College
Ezra A. Brown, Virginia Polytechnic Institute and State University

1:00 pm – 3:00 pm
Invited Paper Session
Teaching Combinatorial Mathematics
Alan Tucker, SUNY at Stony Brook

1:00 pm – 3:00 pm
MAA Contributed Paper Session
Uses of the WWW that Enrich and Promote Learning
Kirby Baker, UCLA
Roger Nelson, Ball State University

1:00 pm – 3:00 pm
MAA Contributed Paper Session
Teaching and Learning Proof in Inquiry-Based Courses: Integrating Research and Practice
Susan Hammond Marshall, Monmouth University
Jennifer Christian Smith, University of Texas at Austin

1:00 pm– 3:00 pm
Minicourse #1: Part 2
Teaching a Course in the History of Mathematics
V. Frederick Rickey, U.S. Military Academy
Victor J. Katz, University of the District of Columbia

1:00 pm – 3:00 pm
Minicourse #2: Part 2
Mathematical Finance
Walter R. Stromquist, Bryn Mawr College

1:00 pm – 5:00 pm
MAA Student Paper Sessions
Edward C. Keppelmann, University of Nevada
Mary S. Hawkins, Prairie View A&M University

1:00 pm – 5:00 pm
Pi Mu Episilon Paper Sessions
J. Douglas Faires, Dayton State University

1:00 pm – 5:15 pm
General Contributed Paper Session
Shawnee L. McMurran, California State University, San Bernardino
Sarah L. Mabrouk, Framingham State College

3:00 pm – 4:30 pm
Exhibit Hall Reception

3:00 pm – 4:20 pm
Environmental Mathematics SIGMAA
Conversations About Mathematics and the Environment
Patricia Clark Kenschaft, Montclair State University

3:15 pm – 5:15 pm
Invited Paper Session
Interesting Topics in Difference Equations
Sarah Mabrouk, Framingham State College

3:15 pm – 5:15 pm
MAA Contributed Paper Session
Nifty Examples in Discrete Mathematics
William Marion, Valparaiso University
Brian Hopkins, Saint Peter's College

3:15 pm – 5:15 pm
MAA Contributed Paper Session
Aligning Assessment Methods with Learning and Teaching in Courses for Majors
Donna Beers, Simmons College

3:15 pm – 5:15 pm
Minicourse# 5: Part 1
Geometry with History for Teaching Teachers
David W. Henderson, Cornell University
Daina Taimina, Cornell University

3:15 pm – 5:15 pm
Minicourse# 6: Part 1
Contemporary College Algebra: A Refocused College Algebra Course
Laurette Foster, Prairie View A&M University
Dorothy Hunter, Huston-Tillotson College
Don Small, U.S. Military Academy

3:15 pm – 5:45 pm
Invited Paper Session
Gems in Applied Mathematics
Kay Somers, Moravian College

5:00 pm – 6:00 pm
SIGMAA on the History of Mathematics
Count Her In!
(A play about women in mathematics)
Joanne Peeples, El Paso Community College
Hamide Dogan, University of Texas at El Paso

5:00 pm – 6:30 pm
SIGMAA on Teaching Advanced High School Mathematics
Dan Teague, North Carolina School of Science and Mathematics

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

8:00 pm – 8:50 pm
Invited Address
PME/J. Sutherland Frame Lecture
Proofs That Really Count: The Art of Combinatorial Proof
Arthur T. Benjamin, Harvey Mudd College

9:00 pm – 11:00 pm
AWM RECEPTION

SATURDAY, AUGUST 6TH

8:00 am – 2:00 pm
MathFest Registration

8:30 am – 9:20 am
Invited Address
AWM-MAA Lecture
Techniques for Visualizing Frequency Patterns in DNA
Fern Hunt
National Standards and Technology

9:00 am – 2:00 pm
Exhibits and Book Sales

9:00 am – 2:00 pm
Student Hospitality Center

9:00 am – 2:00 pm
Email Lab

9:30 am – 10:20 am
Hedrick Lecture Series
Crystals, Tilings, and Packings
Lecture 3: Apollonian Circle Packings
Jeffrey Lagarias, University of Michigan

10:30 am – 11:20 am
MAA Invited Address
Cantor and Sierpinski, Julia and Fatou: Crazy Topology in Complex Dynamics
Robert L. Devaney, Boston University

11:30 am – Noon
MAA Business Meeting

1:00 pm – 2:20 pm
Graduate Student Session
Negotiating With the Administration
Jacqueline Jensen
Sam Houston State University
Kimber Tysdal, Hood College

1:00 pm – 2:20 pm
Panels and Other Sessions
A Fresh Start for Collegiate Mathematics
Nancy Baxter Hastings, Dickinson College

1:00 pm – 2:20 pm
Panels and Other Sessions
Using the CUPM Curriculum Guide 2004
Cheryl Olsen, Shippensburg University

1:00 pm – 2:50 pm
Panels and Other Sessions
AP Calculus Workshop: Focusing on the Fundamental Theorem
Daniel Teague, North Carolina School of Science and Mathematics

1:00 pm – 2:50 pm
Student Session
Walking on Long Paths
John Harris, Furman University

1:00 pm – 3:00 pm
Invited Paper Session
History and Philosophy of Mathematics
Florence Fasanelli, AAAS
Alejandro Garciadiego, Universidad Nacional Autónoma de México

1:00 pm – 3:00 pm
Contributed Paper Session
SIGMAA on Rume (Research to Practice)
William Martin, North Dakota State University
Barbara Edwards, Oregon State University

1:00 pm – 3:00 pm
Minicourse #3: Part 2
Infusing Connections into Core Courses for Future Secondary Teachers
Steve R. Benson and Al Cuoco, Education Development Center
Karen J. Graham, University of New Hampshire
Neil Portnoy, Stony Brook University

1:00 pm – 3:00 pm
Minicourse #4: Part 2
The Mathematics of Presidential and Other Elections
Steven J. Brams, New York University

1:00 pm –5:00 pm
General Contributed Paper Session
Shawnee L. McMurran, California State University, San Bernardino
Sarah Mabrouk, Framingham State College

1:00 pm – 5:15 pm
Contributed Paper Session
Advances in Recreational Mathematics
Charles Ashbacher, Charles Ashbacher Technologies

2:30 pm – 4:30 pm
Invited Paper Session
Cool Applications of Complex Analysis at the Undergraduate Level
Michael A. Brilleslyper and Beth Schaubroeck, U.S. Air Force Academy

3:00 pm – 3:50 pm
MAA Student Lecture
Lights, Camera, Freeze!
Annalisa Crannell
Franklin and Marshall College
Marc Frantz, Indiana University

3:15 pm – 5:15 pm
Contributed Paper Session
Innovations in Teaching Discrete Mathematics
William E. Fenton, Bellarmine University
Nancy Hagelgans, Ursinus College

3:15 pm – 5:15 pm
Invited Paper Session
Graph Theory Ideas for Undergraduate Research
Aparna Higgins, University of Dayton

3:15 pm – 5:15 pm
Panels and Other Sessions
Preparing Successful Teams for Mathematics Competitions
Steven R. Dunbar, University of Nebraska

3:15 pm – 5:15 pm
Minicourse #5: Part 2

SATURDAY, AUGUST 6TH CONTINUED

Geometry With History for Teaching Teachers
David W. Henderson, Cornell University
Daina Taimina, Cornell University

3:15 pm – 5:15 pm — **Minicourse# 6: Part 2**
Contemporary College Algebra: A Refocused College Algebra Course
Laurette Foster, Prairie View A&M University
Dorothy Hunter, Huston-Tillotson College
Don Small, U.S. Military Academy

4:00 pm – 5:00 pm — **Student Problem Solving Competition**
Richard Neal, American Society for the Communication of Mathematics

5:00 pm – 6:15 pm — **MAA Mathematical Contest in Modeling (MCM) Winners**
Ben Fusaro, Florida State University

6:00 pm – 9:00 pm — **MAA Silver and Gold Reception and Banquet**
Emcee, Tina Straley
Speaker, Alan Tucker

CALL FOR STUDENT PAPERS

Students who wish to present a paper at MathFest 2005 in Albuquerque, New Mexico 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 at www.maa.org under STUDENTS, or can be obtained from Dr. Edward Keppelmann <keppelma@unr.edu>.

Students who make presentations at the MathFest, and who are also members of MAA Student Chapters, are eligible for partial travel reimbursement. Travel funds are limited this year so early application is encouraged. The deadline for receipt of applications is Friday, June 24, 2005.

Pi Mu Epsilon 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.pmemath.org or can be obtained from PME Secretary-Treasurer, Dr. Leo Schneider <leo@jcu.edu>. Students making presentations at the Annual Meeting of PME are eligible for partial travel reimbursement. The deadline for receipt of abstracts is Friday, June 24, 2005.

Image courtesy of www.marblestreetstudio.com.

Student Program AT A GLANCE

Wednesday, August 3rd

5:30 pm – 6:30 pm — **MAA /PME STUDENT OPENING RECEPTION**

Thursday, August 4th

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

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**

3:00 pm – 5:00 pm — **Graduate Student Poster Session**
John Vano, University of Wisconsin

5:00 pm – 5:45 pm — **Math Horizons Special Session**
Arthur T. Benjamin, Harvey Mudd College
Jennifer J. Quinn, Occidental College

5:00 pm – 6:00 pm — **Graduate Student Reception**

Friday, August 5th

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

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

1:00 pm – 2:20 pm — **How to Apply for Jobs**
David Manderscheid, University of Iowa

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

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

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

8:00 pm – 8:50 pm — **Invited Address**
PME/J. Sutherland Frame Lecture
Proofs That Really Count: The Art of Combinatorial Proof
Arthur T. Benjamin, Harvey Mudd College

Saturday, August 6h

9:00 am – 2:00 pm — **Exhibits and Book Sales**

9:00 am – 2:00 pm — **Student Hospitality Center**

1:00 pm – 2:20 pm — **Negogiating With the Administration**
Jacqueline Jensen
Sam Houston State University
Kimber Tysdal, Hood College

1:00 pm – 2:50 pm — **Undergraduate Student Activities Session**
Walking on Long Paths
John Harris, Furman University

2:30 pm – 3:50 pm — **The First Year Experience as a Faculty Member**
Julie Jones, Sam Houston State University

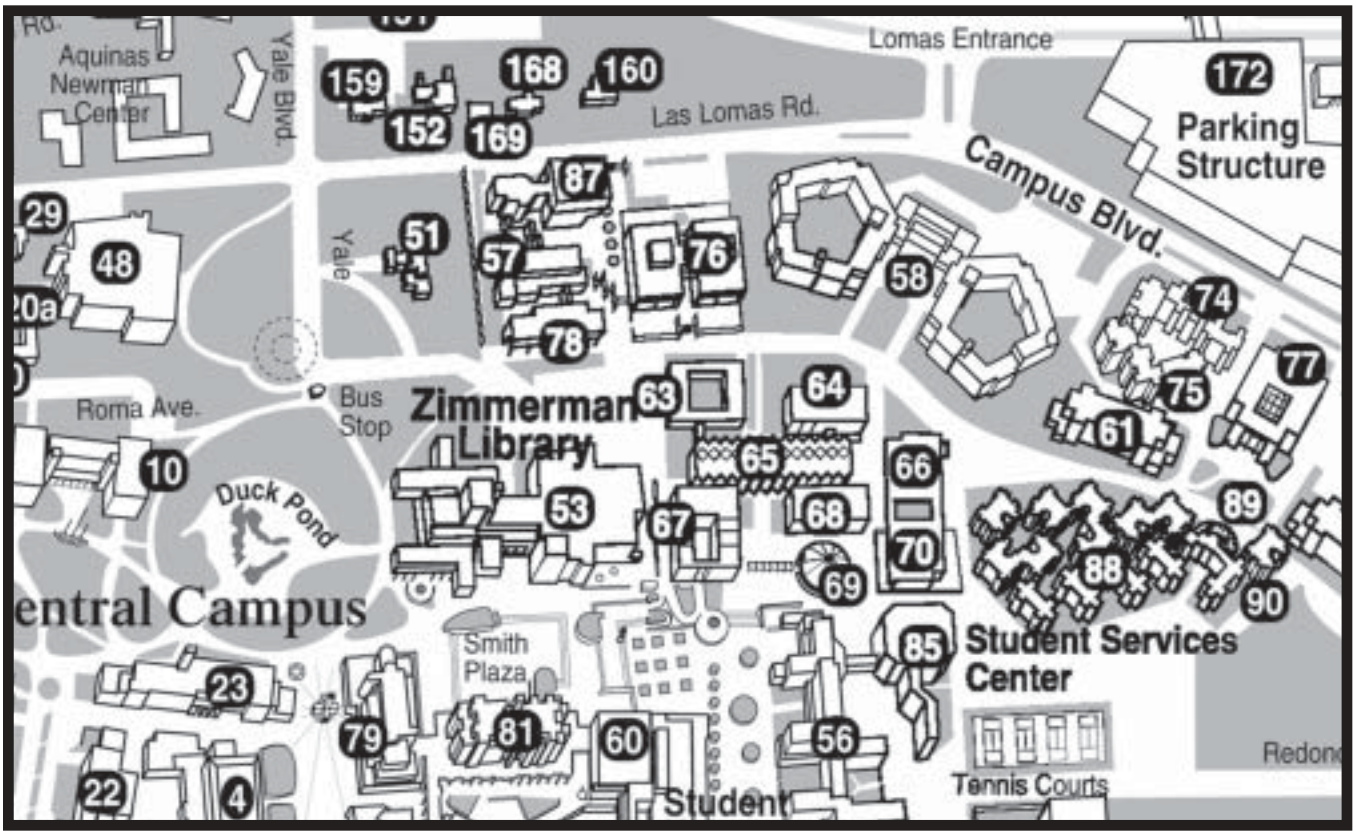
3:00 pm – 3:50 pm — **MAA Student Lecture**
Lights, Camera, Freeze!
Annalisa Crannell, Franklin and Marshall College
Marc Frantz, Indiana University

4:00 pm – 5:00 pm — **Student Problem Solving Competition**
Richard Neal, American Society for the Communication of Mathematics

5:00 pm – 6:00 pm — **MAA Mathematical Contest in Modeling (MCM) Winners**
Ben Fusaro, Florida State University

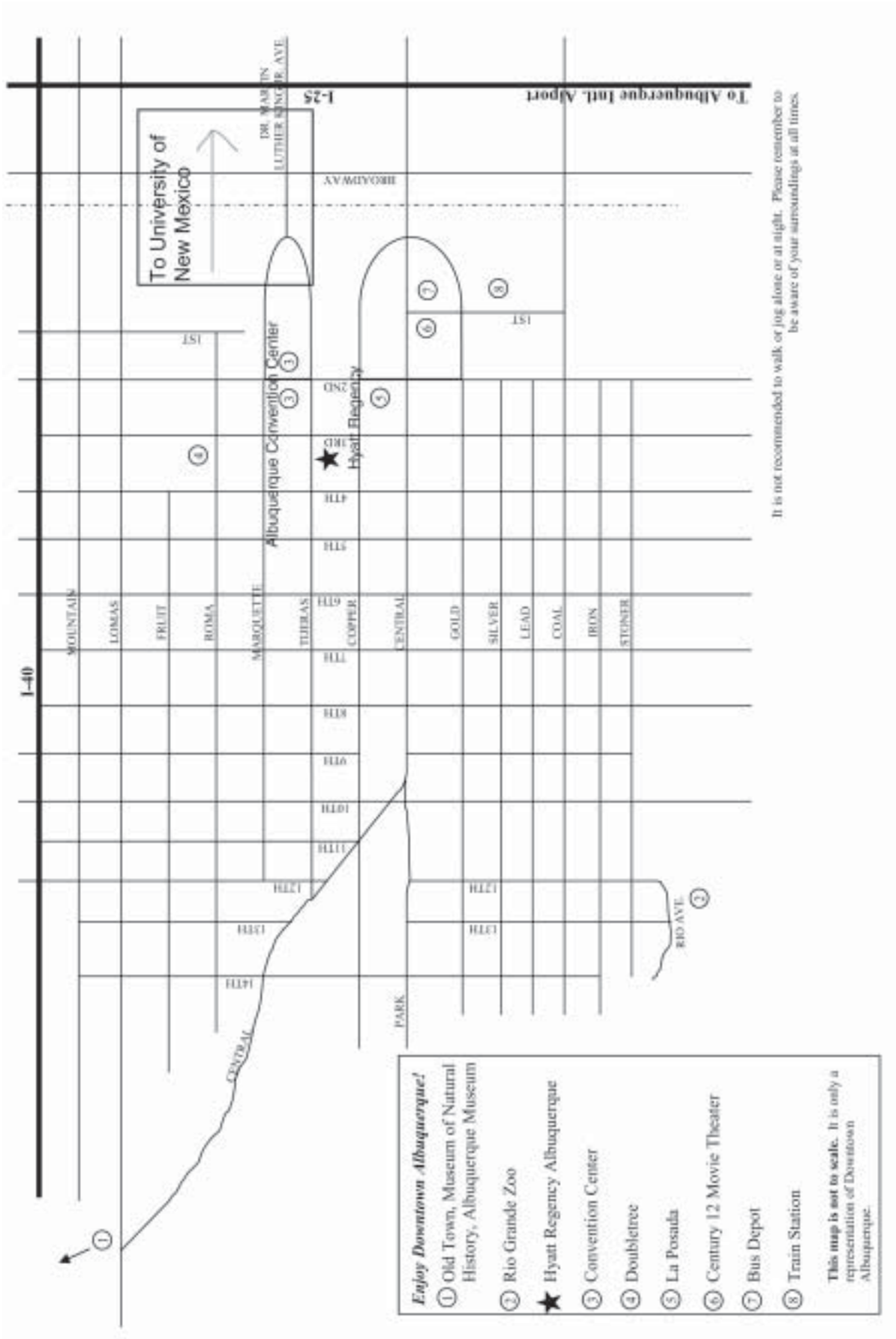
Student Hospitality Center

University of New Mexico



Key Locations

- 48 Dane Smith Math Hall
- 58 Hokana Hall Dormitory
- 77 La Posada Dining Hall
- 89 Student Services Center


To Albuquerque Intl. Airport
I-25
DR. MARTIN LUTHER KING JR. AVE
To University of New Mexico
LOMAS AVE
1ST
Albuquerque Convention Center
Hyatt Regency
2ND
3RD
4TH
5TH
6TH
7TH
8TH
9TH
10TH
11TH
12TH
13TH
14TH
I-40
MOUNTAIN
LOMAS
FRUIT
ROMA
MARQUETTE
TIJERAS
COPPER
CENTRAL
GOLD
SILVER
LEAD
COAL
IRON
STONER
PARK
RIO AVE
It is not recommended to walk or jog alone or at night. Please remember to be aware of your surroundings at all times.
Enjoy Downtown Albuquerque!
1 Old Town, Museum of Natural History, Albuquerque Museum
2 Rio Grande Zoo
★ Hyatt Regency Albuquerque
3 Convention Center
4 Doubletree
5 La Posada
6 Century 12 Movie Theater
7 Bus Depot
8 Train Station
This map is not to scale. It is only a representation of Downtown Albuquerque.

Save the Date!

Photo credit: Crescent Bend.

W.P. Toms Memorial Gardens

MathFest 2006
August 10–12

Photo credit: Knoxville Museum of Art.

Knoxville Museum of Art

Photo credit: KTSC.

Downtown Knoxville and the University of Tennessee

The Annual Summer Meeting of
The Mathematical Association of America

Knoxville, TN

Albuquerque Balloon Rides
Image courtesy of www.marblestreetstudio.com.

Registration FORM

MATHFEST 2005 · AUGUST 4-6 · ALBUQUERQUE CONVENTION CENTER

MathFest 2005 · Albuquerque, NM · Advance Registration/Housing Form

Name_____

Mailing Address_____

_____

Telephone_____ Fax_____

Email Address_____

Badge Information

Name to appear on badge_____
(First and Last Name)

Affiliation for badge_____

Deadlines:

Early Bird Registration: June 20, 2005
If your form is received by this date, badge and program can be mailed.

MathFest, Short Course, Minicourse, Banquets & Events: July 25, 2005

Hotel Reservations, Changes & Cancellations: July 8, 2005

Residence Hall Changes/Cancellations: (15% cancellation fee) July 21, 2005*

Refund 50%:
MathFest: August 1, 2005
Short Course & Minicourses: July 15, 2005

*no refunds after this date

I am a first time attendee? _ Yes _ No

_ I do not want my program mailed to me on July 15, 2005. I will pick it up. _ I want acknowledgement of this registration sent by U.S. mail, not email.

Registration & Event Fees – Register online at www.maa.org

MathFest	by 6/20	after 6/20
Member _ MAA _ AMS	$190	$245
Nonmember	$275	$350
Graduate Student	$40	$50
Undergrad Student	$25	$30
Unemployed	$40	$50
Individual from a Developing Country	$40	$50
K-12 Teacher	$40	$50
Emeritus Member	$40	$50
One-day _Thu _Fri _Sat	$99	$99
High School Student	$10	$10
Guest	$15	$15

Subtotal for MathFest **$**_____

Minicourses	by 6/20	after 6/20
#1 *Teaching a Course in the History of Mathematics*	$60	$70
#2 *Mathematical Finance*	$60	$70
#3 *Infusing Connections Into Core Courses for Future Secondary Teachers*	$60	$70
#4 *The Mathematics of Presidential and Other Elections*	$60	$70
#5 *Geometry with History for Teaching Teachers*	$60	$70
#6 *Contemporary College Algebra*	$60	$70

Minicourses: Enroll me in #_____and/or #_____
My alternatives are #_____ and/or #_____
You may sign up for a maximum of 2 Minicourses.

MathFest Registration is Required for Minicourses.

Subtotal for Minicourses **$**_____

Social Events	#Tix	Price	Total
Santa Fe Tour (8/3) & Shopping Extravaganza	____	$46	$_____
Opening Banquet (8/3)			
Chicken	_____	$30	$_____
Beef	_____	$35	$_____
Vegetarian	_____	$30	$_____
Los Amigos Round Up (8/4)	_____	$35	$_____
PME Student Banquet (8/5)			
Undergrad students & Student paper presenters	_____	$20	$_____
All Others	_____	$30	$_____

_ Chicken _ Lasagna (Veg)

Silver & Gold Banquet (8/6)			
Pork	_____	$29	$_____
Steak	_____	$36	$_____
Vegetarian	_____	$29	$_____

Subtotal for Social Events: **$**_____

Student Events

Graduate Student Reception (8/4) _ Yes _ No

Short Course (8/1-8/2) by 6/20 after 6/20 *Recreational Mathematics: A Short Course in Honor of the 300th Birthday of Benjamin Franklin*		
MAA or AMS Member and MathFest Participant	$135	$150
Nonmember or MathFest Non-participant	$185	$200
Student	$50	$60

MathFest Registration is not required for the Short Course. Contact MAA for more information.

Subtotal for Short Course: **$**_____

Payment Information

Registration/Ticket Fees (This Page)
$_____

Housing Deposit/ Dorm Fees (Next Page)
$_____

Note: Registration and Housing will be charged separately.

_ Check. Make checks payable to the MAA. Checks must be drawn on a U.S. Bank in U.S. dollars.

_ Charge my:

_ VISA _ MasterCard

Card Number:

Expiration Date:

Signature:

Name on Card:

Zip Code of your credit card billing address:

(Please note that a $5 processing fee will be applied for each returned check or invalid credit card.)

_ Purchase Order

#_____
Please enclose copy.

Mail or Fax to:
The Mathematical Association of America/MathFest
1529 18th Street, NW
Washington, DC 20036
Fax: 202.387.0162

Questions/Changes/Special Needs:
Call 1.800.741.9415 ext. 448 or 474 or
Direct: 202.319.8448

MATHFEST 2005 · AUGUST 4-6 · ALBUQUERQUE CONVENTION CENTER

MathFest 2005 · Albuquerque, NM · Housing Form

Hyatt Regency Albuquerque

Reservations at this hotel must be made through the MAA to receive the conference rates listed. The MAA can process reservations and changes until 4:00 pm on July 8, 2005. After July 8, reservations and/or changes can only be made if space is available.

University of New Mexico

The university is approximately a 10 minute ride from the Hyatt Regency Albuquerque and the Albuquerque Convention Center. Shuttle service will be provided between the university and the Hyatt Regency and the Albuquerque Convention Center. Floors are designated by gender and may not be appropriate for everyone. All dormitory rooms are non-smoking. The dormitories are not suitable for children.

A campus dining facility is available for breakfast and dinner.

Hokana Residence Hall

Air conditioned housing is available in single/double residence hall rooms in Hokana Hall, which is the shape of a pentagon with a grass courtyard in the middle. This building is wheelchair accessible.

Each room is equipped with an overhead light, one or two single-sized bed(s), pillow, a desk and chair, a floor lamp, a dresser, a bookcase, and a closet. The rooms are air conditioned and each has individual cooling controls. Bathrooms are located on each floor. They have four sinks, stalls and showers and are cleaned daily. Rooms are made up with linen, pillow and case, blanket, and two towels. There will not be a daily towel exchange.

Campus and local telephone service is provided at no charge. For long-distance service, participants must use a credit card or calling card.

Check-In

Check-in at Hokana Hall front desk is from 7:00 am to 11:00 pm daily. The front desk provides many services, including information, change, messages, mail, directions, and more. After-hours check-in is at the Student Residence Center (SRC) in Building 88, approximately a 5 minute walk from Hokana Hall. The SRC is open 24 hours a day. There is an Automatic Teller Machine (ATM) in the SRC building available for your use, as well as a postage machine that includes envelopes and postcards. The C-Store, a Seven-Eleven type store, is also located in the SRC.

Hyatt Regency Albuquerque

330 Tijeras NW
Albuquerque, NM 87102
$133.00 single/double
(Reservations through MAA only until July 8, 2004)

Environmentally friendly full service hotel located across the street from the Albuquerque Convention Center, with restaurants, a lounge, fitness center, outdoor pool, physically challenged and nonsmoking rooms available, rooms include full amenities including high speed internet wireless (T-Mobile) for $9.99 per day or $6.00 per login (up to 60 minutes). A wireless lounge is also located in the lobby. Self-parking is $11.00 per night with in/out privileges, valet parking is $15.00 per night with in/out privileges. Check-in: 3:00 p.m. Checkout: noon.

Reservations

Reservations at the Hyatt Regency Albuquerque must be made through this form or online at www.maa.org/mathfest. Reservations made with the hotel directly will be subject to a higher room rate. The MAA can process reservations and changes until 4:00 p.m. on July 8, 2004.

All rates are subject to a 12% room and state tax. Any reservations cancelled less than 24 hours prior to arrival will be subject to a cancellation fee equal to one night's stay. Changes made to departure date after check-in will be subject to a charge of one night plus tax. Rooms will fill quickly at this property so participants are advised to reserve rooms as early as possible.

Room Type:

Ĭ Single – One Bed/One Person $133
Ĭ Double – Two Beds/Two Persons $133
Ĭ Triple – Two Beds + cot/Three Persons $153
Ĭ Quad – Two Beds + cot/Four Persons $173
Ĭ Double – One Bed/Two Persons $133
Ĭ Triple – Two Beds/Three Persons $153
Ĭ Quad – Two Beds/Four Persons $173

Arrival Date: _____ Departure Date: _____

Name of Other Room Occupants: 1)_____

2)_____

3)_____

Payment for Hotel: To guarantee a room, please include a deposit in the amount of one nights stay. Provide a credit card number or check in the payment information section below.

University of New Mexico-Hokana Residence Hall

Cost per person occupying a bed is $30 per single, $24 per double. The maximum number of persons in a room is two. Residence hall accommodations are not suitable for children. Halls are gender designated due to the shared hall bathroom facilities.

Reservations cannot be made directly with the university. Rooms will be available from July 31st - August 7th.

To reserve university housing, please send a completed Housing Form to The Mathematical Association of America's Meeting Department (MAA) or online at www.maa.org/mathfest. All completed forms must be received by 4:00 p.m. on July 21. Changes may be accepted by the MAA until 4:00 p.m. on July 21. A 15% cancellation fee will be charged for all university housing cancellations made by July 21. Unfortunately, refunds for changes and cancellations of university housing after July 21st cannot be issued.

Ĭ Male Floor Ĭ Female Floor Date of Arrival: _____ Date of Departure: _____

Room Type: Ĭ Single $30 Ĭ Double $24

Name of Other Room Occupant: _____

Arrival Date: _____ Departure Date: _____

Payment for University: To guarantee a room, please provide payment for your full stay. Provide a credit card number or check in the payment information section below.

Payment Information: Ĭ Check Enclosed Ĭ Charge my Credit Card Ĭ VISA Ĭ MasterCard

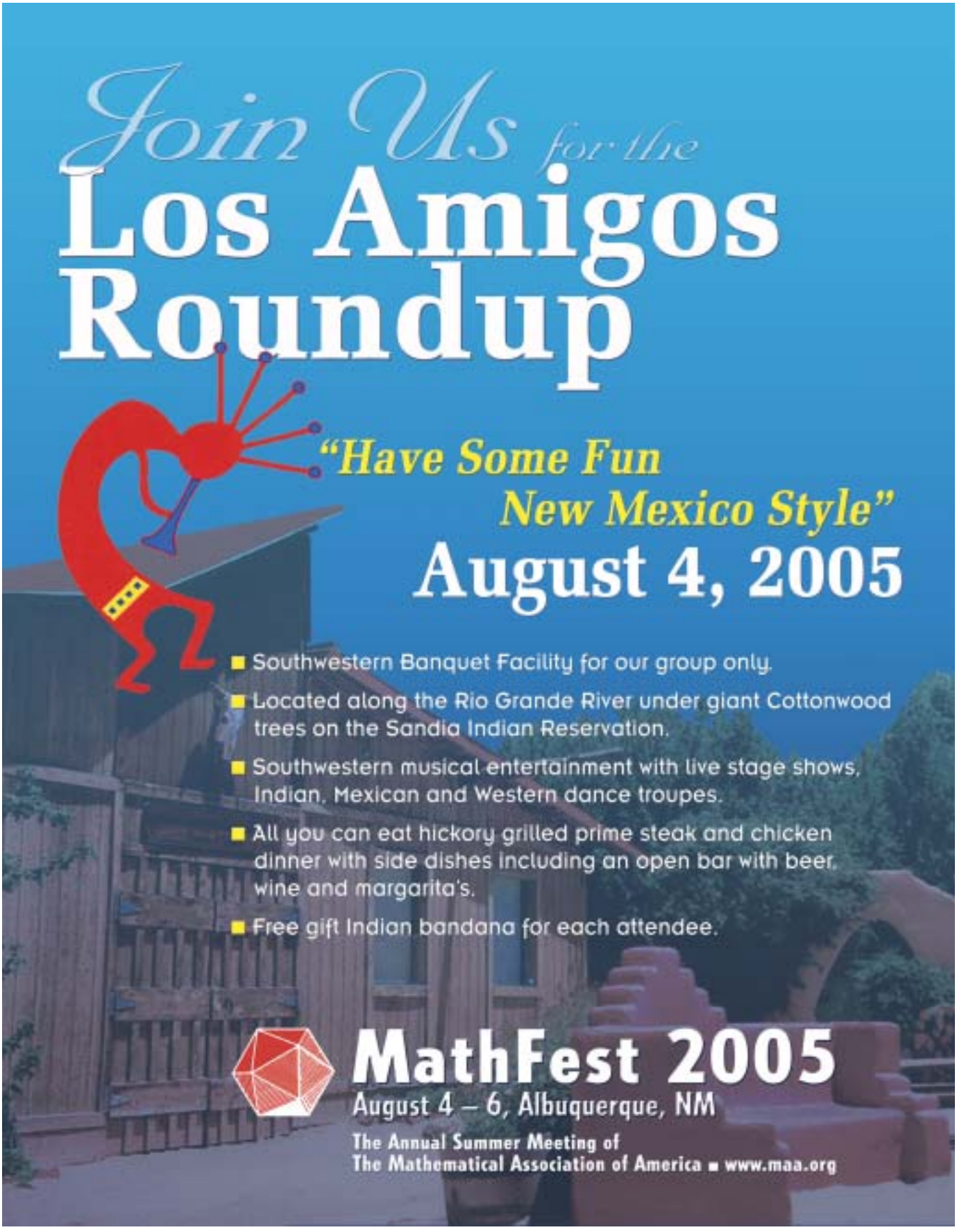
Credit Card Number: _____ Exp._____

Name on Card: _____ Signature_____

Total to be charged: $_____

Special Requests: _____

Please put total amount for housing on the registration side of the form.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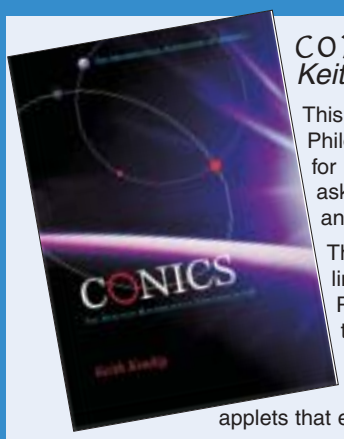

CONICS
Keith Kendig

This book engages the reader in a journey of discovery through a spirited discussion among three characters: Philosopher, Teacher, and Student. Philosopher embraces symmetry, abhors exceptions, and continually strives for unity. Teacher is a supportive and open-minded math professor, while Student keeps them grounded, often asking for pictures and concrete examples. Their mutual synergism help realize Philosopher's goal of a beautiful and consistent view of conics.

The three characters soon appreciate that hyperbolas are really just ellipses that have been pushed beyond the line at infinity, and that conics reveal much of their beauty when viewed over the complex numbers. Though Philosopher's leading questions often seem outrageous, the hardy group persists in removing exceptions and tearing down barriers. As with any good story, they ultimately achieve their goal.

This book is appropriate for anyone having some familiarity with complex numbers and a little linear algebra. There are exercises at the end of each chapter, over 175 figures, and a disk containing a collection of 36 applets that enhance many of these figures.

Dolciani • Catalog Code: DOL-29 • 264 pp., Paperbound, 2005 • ISBN: 0-88385-335-3 • List Price: $55.95 • MAA Member Price: $44.95

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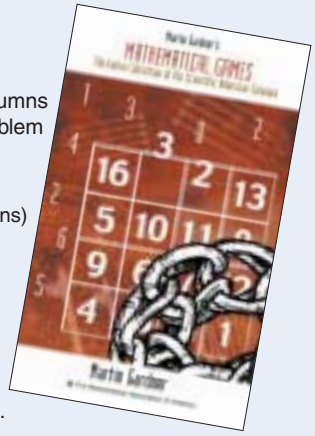

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