



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.

EARLE RAYMOND HEDRICK LECTURE SERIES WHAT IS ARITHMETIC COMBINATORICS?

W.T. Gowers, Cambridge University

Some mathematical problems and results belong to areas of mathematics with well-established names such as functional analysis or algebraic geometry. Others are harder to categorize. In recent years increasing numbers of mathematicians have found themselves using techniques from number theory, analysis, and combinatorics, which leaves them unable to answer what for most mathematicians is a simple question: “What area of mathematics do you work in?” However, this social disadvantage may soon be a thing of the past because some fascinating common themes are emerging, enough for the area to deserve its own name. And there is even a name that people seem to be happy with: arithmetic combinatorics. In these talks, I shall introduce some of the main results and open problems of arithmetic combinatorics, give some ideas of how they are proved, and explain some of the surprising connections between them.



LECTURE 1: THE BACKGROUND: SOME THEOREMS AND OPEN PROBLEMS IN NUMBER THEORY, ANALYSIS, AND COMBINATORICS

Thursday, August 10, 9:30 am - 10:20 am

This lecture will set the scene for additive combinatorics by discussing several famous theorems and problems that predate it. Amongst them are van der Waerden’s theorem on arithmetic progressions, Goldbach’s conjecture, the Kakeya problem, some deceptively simple problems of Paul Erdős and a recent breakthrough of Ben Green and Terence Tao. They have in common that they are easy to state, but hard to solve. Deeper similarities between them will be explored in subsequent lectures.

LECTURE 2: DISCRETE FOURIER ANALYSIS: ITS POWER AND ITS LIMITATIONS

Friday, August 11, 9:30 am – 10:20 am

Fourier analysis is concerned with the splitting up of a signal, such as a sound wave, into simple parts, such as pure sine waves. Its first cousin, discrete Fourier analysis, is an extremely useful tool for thinking about a certain kind of problem in number theory. I shall explain why this might be and then give examples of how Fourier analysis can be used to solve, or at least begin to attack, some of the problems mentioned in the first lecture. Oddly enough, the *failure* of Fourier analysis to solve some of those problems is almost more interesting than its successes,

because it raises the possibility that arithmetic combinatorics can repay some of the debt it owes to analysis. The difficulties one encounters when one tries to improve the best known results about arithmetic progressions are genuine ones, and it looks likely that, in order for them to be overcome, it will be necessary to develop a new, more powerful version of Fourier analysis, which would almost certainly have applications beyond arithmetic combinatorics.

LECTURE 3: FREIMAN’S THEOREM AND ARITHMETIC PROGRESSIONS OF LENGTH 4

Saturday, August 12, 9:30 am – 10:20 am

Some of the most interesting problems in arithmetic combinatorics concern arithmetic progressions, that is sequences like 5, 11, 17, 23, 29, where each number is obtained from the previous one by adding some fixed amount (in this case 6). Fourier analysis is very useful for analyzing progressions of length 3, but runs into difficulties for longer progressions. However, ways have been found for getting around some of these difficulties, and these are leading to a new and more powerful theory of “quadratic” Fourier analysis. I shall explain in very broad terms what this means and why it is still by no means fully understood. A central role in this development is played by a fascinating result known as Freiman’s theorem. Once again, the theorem is much easier to state than it is to prove, but it is possible to describe some of the ideas from a beautiful proof due to Imre Ruzsa. There are some questions that Ruzsa’s techniques are not strong enough to answer, and a central problem in arithmetic combinatorics is to strengthen them. This could have profound consequences: the solution of several problems, the development of a new form of “linear” Fourier analysis, and a significant increase in the cohesion and maturity of arithmetic combinatorics.

MAA INVITED ADDRESS THE CIRCLE (AND KNOT AND LINK) OF LIFE: HOW TOPOLOGY UNTANGLES KNOTTY DNA QUESTIONS

Dorothy Buck

Imperial College London

Thursday, August 10

8:30 am – 9:20 am

DNA is often referred to as ‘the staff of life’, as it is the blueprint for all hereditary traits and diseases, as well as the template for all proteins. But the structure of DNA structure is often more complicated than a straight ‘staff.’ DNA molecules can have a circular (e.g. bacterial), or topologically constrained (e.g. human), central axis. The axis can even be knotted or linked! We’ll discuss how the topology of this axis affects important biological processes – both local (e.g. which proteins attach to DNA) and global (e.g. how a cell



Invited Addresses continued

divides). We'll conclude with some examples of how topology (knot theory) has helped our understanding of these processes.

MAA INVITED ADDRESS **STORIES FROM THE HISTORY** **OF MATHEMATICS**

David Bressoud, Macalester College

Saturday, August 12

10:30 am – 11:20 am

This is a collection of some of my favorite stories from the history of mathematics, stories that I use in my classes to illustrate what it really means to “do” mathematics.



tempts to determine how fast dragsters are really going as well as the maximum acceleration achieved by today's dragsters. He will explain why dragster acceleration is greater than the acceleration due to gravity, an age-old inconsistency. The talk will also include an historical account of the development of the sport of drag racing and lively videos.

He will also share relevant formative experiences encountered along his life's journey as a publicly educated first-generation Mexican American from the barrios of Los Angeles to a Rice University Mathematics Professor and President Clinton Appointee to the National Science Board. As the director of the mathematical and engineering sciences program at Rice, a program recognized for its production of minority PhDs, he will describe the challenges, successes, and lessons learned along the way.



MAA INVITED ADDRESS **SOME OPEN QUESTIONS** **ABOUT CONVEX POLYHEDRA**

Jesus A. De Loera

University of California Davis

Thursday, August 10

10:30 am – 11:20 am

Convex polyhedra are familiar objects since our childhood. Indeed, cubes, pyramids, and triangles are common staples in all kindergar-

tens! Unknown to most people, polyhedra, in their high-dimensional version, are also widely used in applied mathematics (e.g. operations research, finances, computer networks, and more). Their beauty and simplicity appeal to all, but very few people know of the many easy-to-state difficult unsolved mathematical problems that hide behind their beauty. The purpose of this lecture is to introduce an audience without prior background to some of these open questions.

MAA STUDENT LECTURE **MATH AT TOP SPEED: EXPLOR-** **ING AND BREAKING MYTHS IN** **DRAG RACING FOLKLORE**

Richard Tapia, Rice University

Thursday, August 10

1:00 pm – 1:50 pm

Either as participant, support individual, or involved spectator, Richard Tapia has been involved throughout his life in drag racing, and has witnessed the birth and growth of many myths concerning dragster speed and acceleration. In this talk, he will use mathematics to identify frameworks for the study of a particular popular belief and then apply mathematics to better understand the belief at hand. Some myths will be explained and validated, while others will be destroyed. Included will be at-



NAM DAVID BLACKWELL **LECTURE** **PUBLIC HEALTH AND** **MATHEMATICS: SOME** **EMERGING CHALLENGES** **AND PARADIGMS** **AT THE INTERFACE**

Dominic P. Clemence

North Carolina A&T

State University

Friday, August 11

8:30 am – 9:20 am

Public health issues concern us all: just a few include emerging and re-emerging diseases, the shrinking global neighborhood, health disparities, deliberately released infectious agents, and natural disasters. While in the past mathematics has played a significant role in addressing some public health concerns, one cannot but wonder, ‘can more be done?’ and in particular, ‘in what ways can mathematicians contribute more?’ when one looks at the status of public health world-wide. We share a mathematician's perspective on a few of these issues, and highlight some paradigms and challenges emerging at the public health-mathematics interface.



JAMES R. LEITZEL LECTURE **TEACHING RESEARCH:** **ENCOURAGING DIVERSITY**

Francis Edward Su

Harvey Mudd College

Friday, August 11

10:30 am – 11:20 am

What does it take to turn a learner into a discoverer? Or to turn a teacher into a coadventurer? I will describe a handful of experiences, from teaching a middle-school math class to doing research with under-



graduates, that have changed the way that I would answer these questions. Some of the lessons I've learned have surprised me.

**PME J. SUTHERLAND
FRAME LECTURE
ELLIPSES AND CIRCLES?
TO UNDERSTAND
VOTING PROBLEMS??!**

Donald Saari

University of California Irvine

Friday, August 11, 8:00 pm – 9:00 pm

Why is it that whenever we put forth a carefully considered proposal, somebody can put forth an “improvement?” Yet, attend any meeting, even the MAA business meetings, and it happens on a regular basis. Why? Insight is possible by using just the geometry of circles. And then, to introduce a new game theoretic solution concept, I will use the geometry of ellipses.



**AWM-MAA ETTA Z. FALCONER
LECTURE
CANCER MODELING: FROM THE
CLASSICAL TO
THE CONTEMPORARY**

Trachette Jackson,
University of Michigan

Saturday, August 12,
8:30 am – 9:20 am

Cancer is one of the leading causes of death in the world today, and an abundance of research is being conducted in order to better understand tumor development, to evolve existing cancer therapies, and to discover new approaches to combat the disease at the cellular and molecular levels. Mathematical modeling, aided by computational tools and combined with the experimental data, have the potential to facilitate a deeper and broader understanding of the cellular and molecular interactions associated with tumor initiation, progression, and treatment, and can guide experimental design and interpretation. Many of the challenges cancer researchers are facing lie at the intersection of the mathematical and biomedical sciences and in this talk I will review the progress that has been made in modeling the various aspects of avascular and vascular tumor growth.



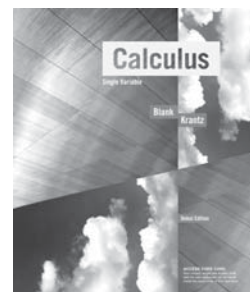
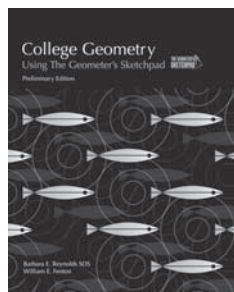
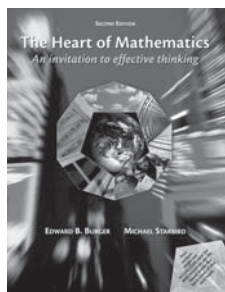
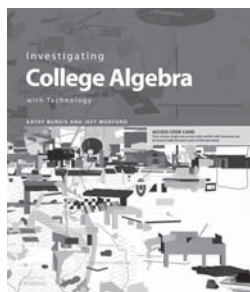
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Invited Paper Sessions

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.

INQUIRY BASED LEARNING – THE NEXT GENERATION

Edward B. Burger, Williams College

Thursday, August 10, 1:00 pm – 3:00 pm

Speakers in the session will include Michael Starbird, University of Texas at Austin, “Teaching independent thinking”; Dick Canary, University of Michigan, “Inquiry based learning at the University of Michigan”; Maria Terrell, Cornell University, “Good questions for mathematics education”; and Edward Burger, Williams College, “A crash course on how not to teach.”

COMPUTATIONAL CONVEXITY AND ITS APPLICATIONS

Jesus De Loera, University of California Davis

Tyrrell McAllister, University of California Davis

Thursday, August 10, 1:00 pm – 4:30 pm

Methods from computational convexity are finding more and more applications in such diverse fields as optimization, representation theory, algebraic geometry, number theory, and theoretical computer science. In this session, researchers in these fields will report on the remarkable advances made in recent years using the tools of computational convexity. Speakers will include Matthias Beck, San Francisco State University, “Enumerating integer-points in polytopes: applications to number theory”; Tyrrell McAllister, UC Davis, “Convex polyhedra and representation theory”; Maurice Rojas, Texas A&M, “Convexity, and phase transitions for detecting real roots”; James Lawrence, George Mason University, “Combinatorial problems and computational convexity”; Paul Goodey, University of Oklahoma, “Projection functions of convex bodies.”

ISOPERIMETRIC PROBLEMS

Frank Morgan, Williams College

Thursday, August 10, 2:15 pm – 5:15 pm

Members and alums of the Williams College NSF SMALL Undergraduate Research Geometry Group and perhaps others will report on work on isoperimetric problems and open questions in various settings, including Riemannian manifolds and manifolds with density, such as Gauss space.

GEMS OF RECREATIONAL MATHEMATICS

Arthur T. Benjamin, Harvey Mudd College

Ezra A. Brown, Virginia Polytechnic Institute and State University

Friday, August 11, 1:00 pm – 3:00 pm

Our speakers are Joe Gallian, University of Minnesota at Duluth, “Weird dice”; Richard Guy, University of Calgary, “Three gems we all know (don’t we?)”; Laura Taalman, James Madison University, “Sudoku variations and research”; and Daniel Velleman, Amherst College, “Fast growing sequences.”

CHAOTIC DYNAMICS AND FRACTAL GEOMETRY

Mario Martelli, Claremont McKenna College

Friday, August 11, 1:00 pm – 6:00 pm

Speakers include Jim Yorke, Kathleen Alligood, Elena Nusse, Celso Grebogi, Ethan Akin, Tim Sauer, Carlos Castillo-Chavez, and John Guckenheimer.

PHYSICAL KNOTS

Dorothy Buck, Imperial College London

Friday, August 11, 3:15 pm – 5:15 pm

Louis Kauffman, University of Illinois at Chicago; Ken Millett, UC Santa Barbara; Eric Rawdon, Duquesne University; Thomas Banchoff, Brown University.

POINTING THE WAY TO PROOF

Diane Herrmann, University of Chicago

Carol Schumacher, Kenyon College

Friday, August 11, 3:15 pm – 5:15 pm

Speakers will include: Michael Starbird, University of Texas - Austin; James Morrow, Mt. Holyoke College; Chris Stevens, St. Louis University; and Don Albers, MAA.

STORIES FROM THE HISTORY OF MATHEMATICS AS A TOOL FOR TEACHING

David Bressoud, Macalester College

Saturday, August 12, 1:00 pm – 3:00 pm

Speakers will include John McCleary, Vassar College, “Euler’s easy solutions to difficult geometric problems”; Rob Tubbs,

University of Colorado, Boulder, “From e^π to $2^{\sqrt{2}}$, motivating the solution to Hilbert’s 7th problem”; Fred Rickey, U.S. Military Academy at West Point; “Some tested examples for using history in your classroom”; and Ed Sandifer, Western Connecticut State University, “Theorem first, or Example first: Newton vs Leibniz again.”

GRAPH THEORY IDEAS FOR UNDERGRADUATE RESEARCH

Aparna Higgins, University of Dayton

Saturday, August 12, 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 areas such as graph labeling, fixing numbers of automorphism groups of graphs, the Erdős-Ko-Rado theorem and Kneser’s conjecture, and using Graffiti.pc for generating conjectures. The speakers have directed undergraduate research in intensive summer experiences and in 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. The speakers are Ermelinda Delavina of University of Houston - Downtown; Anant Godbole of East Tennessee State University; Joshua Laison of Colorado College speaking on “Fixing numbers of automorphism groups of graphs,” and Cynthia Wyels of California State University Channel Islands speaking on “Graceful, equitable, and distance labelings of graphs.”

Contributed Paper Sessions

MAA Contributed Paper Sessions are normally organized around a predetermined topic. Presenters are selected by the paper organizers after reviewing responses to a call for papers. Your proposal must reach the organizer by Tuesday, May 23, 2006.

CURRENT ISSUES IN MATHEMATICS EDUCATION

Carol Vobach, University of Houston-Downtown

Nancy Leveille, University of Houston-Downtown

Thursday, August 10, 1:00 pm – 3:00 pm

This session invites papers exploring mathematics education courses for pre-service or in-service teachers. Topics of interest might include: novel delivery styles or the use of new technology; online activities; courses aligned to national or state standards; interactions with local universities and/or school districts. Verification of techniques cited in the MAA Study “Common ground in K-12 math education” would also be of interest. Additionally, we welcome reports on assessment and the use of grants to support teacher training. It is hoped that a wide variety of presentations will provide interest in topics related to mathematics education.

EXAMPLES THAT USE ABSTRACT ALGEBRA IN OTHER DISCIPLINES IN MATHEMATICS

Tyler J. Evans, Humboldt State University

Thursday, August 10, 1:00 pm – 3:00 pm

The interplay between the various branches of mathematics is arguably one of the most appealing aspects of the profession, and can also serve as a powerful teaching tool. The history of mathematics is replete with examples of this interplay, each of which has helped mathematicians achieve a deeper perspective on their work. This session invites papers in which ideas from group theory, or more generally abstract algebra, are used to establish results that do not necessarily belong to the subject of algebra itself. Presentations may be on a new twist of a familiar example such as the use of elementary properties of finite cyclic groups to prove Fermat’s little theorem and Euler’s generalization of it, or something new. The examples should be presented in such a way that they can be used to supplement lectures and exercises in abstract algebra or related undergraduate courses for the purpose of giving students the opportunity to strengthen their appreciation for the interconnectedness of mathematics.

MATHEMATICS AND SPORTS AND GAMES

Howard Penn, U.S. Naval Academy

E. Lee May, Salisbury University

Thursday, August 10, 2:30 pm – 4:30 pm

Mathematics has long been used to study various sports. Likewise, various games such as Bridge, Chess and Poker make extensive use of mathematics. In turn, applications from these fields present interesting examples that can be used in teaching calculus, probability, statistics, differential equations and other courses.

PROMOTING INTEGRATIVE LEARNING IN MATHEMATICS THROUGH LEARNING COMMUNITIES

Donna Beers, Simmons College

Thursday, August 10, 3:15 pm – 5:15 pm

This session invites presenters to contribute to the scholarship of teaching and learning in mathematics by sharing their experiences in initiating a learning community (LC) during the last three years. Presenters should identify the theme, the partner disciplines, and the course clusters in their LC, plus briefly address the administrative structuring of the student’s time and credit, as well as the faculty member’s time and workload. Presenters should describe the cohort of students who participated in the LC, and address these questions: What mathematics learning outcomes were stated in the course syllabus? What educational experiences or tasks were used to promote each of these learning outcomes? What methods of assessment were used to measure student achievement of the mathematics learning outcomes and why? How do you interpret the results of the assessment? What changes in the LC design or assessment would you like to make for the future?

GÖDEL’S CONTRIBUTIONS TO THE FOUNDATIONS OF MATHEMATICS – A 100TH ANNIVERSARY COMMEMORATION

Linda Becerra, University of Houston-Downtown

Ron Barnes, University of Houston-Downtown

Thursday, August 10, 3:15 pm – 5:15 pm

Since 2006 marks the 100th anniversary of the birth of Kurt Gödel, this session invites papers on his contributions to the foundations of mathematics. Possible topics might include: an outline of the situation before Gödel’s results; Gödel’s results, and their interpretations and applications in mathematics; their implications in computer science and other areas; consideration of what questions in the foundations of mathematics have not yet been resolved; or any other topics related to Kurt Gödel.

WHAT CAN WE DO TO HELP OUR FRESHMEN SEE THAT THERE IS MORE TO MATHEMATICS THAN CALCULUS?

Richard J. Maher, Loyola University Chicago

Friday, August 11, 1:00 pm – 3:00 pm

A large part of any new college freshman class has been calculus to death. Much of their time in high school mathematics classes has been devoted to covering certain material “because it is needed in calculus.” As a result, when they finally encounter calculus as high school seniors or as college freshmen – or perhaps both – they feel they have reached the end of a long journey. And they may feel slightly let down by what they have seen. They do not realize that they are not at the end but only at the beginning of the real journey. We have to let our incoming students know as soon as possible what is out there and why the study of mathematics can in fact be exciting. This session provides faculty whose departments have had success in presenting “something different” to first year students

Contributed Paper Sessions continued

with an opportunity to share what they have done with their colleagues. Papers presented at this session should discuss what is being done, how long it has been going on, what has worked and what has not worked, and how successful the approach has been.

FUN AND INNOVATIVE TECHNIQUES FOR AN ABSTRACT ALGEBRA CLASS

Sharon M. Clarke, Pepperdine University
Andrew Hetzel, Tennessee Technological University
Friday, August 11, 1:00 pm – 3:00 pm

Abstract algebra is, in many cases, one of the first “rigorous proofs” courses that an undergraduate student will take. As its name suggests, abstract algebra is also one of the most abstract math classes that an undergraduate student will take. Consequently, students come to the class fearful and stressed. They fear that they will not be able to make the transition from computation to proof. At the same time, the professor is anxious about not reaching the students and about not being able to teach the course in a way that grabs their attention. In this session, we invite colleagues to present fun and innovative ways of teaching some of the topics in an abstract algebra course. The presenter may either introduce one teaching method he or she uses for an abstract algebra course and then do a brief mock class session with the audience serving as the students, or he or she may present a summary of several innovative techniques he or she has used over one semester. We hope that this session will provide the audience with valuable tools that they can then use in their abstract algebra courses.

ATTRACTING AND RETAINING STUDENTS TO MATHEMATICS PROGRAMS VIA OUTREACH

Sangeeta Gad, University of Houston-Downtown
Friday, August 11, 3:15 pm – 5:15 pm

The migration away from the science, technology, engineering and mathematics (STEM) fields starts in middle school and continues through the undergraduate years. We risk our nation’s leadership role in the high technology society we have developed if the declining college enrollments in STEM subjects remain unchecked. This session seeks to highlight innovative outreach programs from the higher education institutes to stir interest in mathematics as well as STEM fields and innovative programs to retain students in mathematics programs. The presenters may illustrate: summer or year-round programs for middle schools; summer or year-round programs for high schools; bridge programs; and retention programs in higher education for currently enrolled students. It is hoped that presenters will include the impact of the programs measured by the statistical data.

MATHEMATICS AND POPULAR CULTURE

Sarah J. Greenwald, Appalachian State University
Christopher Goff, University of the Pacific
Saturday, August 12, 8:30 am – 10:30 am

References to mathematics in popular culture can reveal, reflect, and even shape how society views mathematics. One way

that mathematics and popular culture interact is through Hollywood. Computer animators for blockbuster filmmakers like Pixar use mathematical algorithms in their work. In addition, television series such as *NUMB3RS* and *Medium*, and movies like *A Beautiful Mind*, *Ice Princess*, and *Proof* offer varied portrayals of people with mathematical talent. In the classroom, using popular culture can be a powerful technique for engaging diverse audiences. Capitalizing on student enjoyment of popular culture can alleviate math anxiety, energize shy and quiet students, and provide a creative introduction to an in-depth study of the related mathematics. This session invites presentations on all aspects related to mathematics and popular culture, including music, movies, television, artwork, and other media. Presentations could focus on how mathematics is changing Hollywood and movies, or how popular culture can be used to understand the way society views mathematicians and their mathematics. Conversely, presentations could focus on how appearances of and references to mathematics in popular culture have been used creatively and effectively in mathematics courses to reduce math anxiety and motivate students to explore significant mathematics.

ADVANCES IN RECREATIONAL MATHEMATICS

Paul R. Coe, Dominican University
William T. Butterworth, DePaul University
Saturday, August 12, 1:00 pm – 3:00 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 organizers encourage submissions that involve computers, that is not at all 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 probably be considered unacceptable. Novel applications as well as new approaches to old problems are welcome. Examples of use of the material in the undergraduate classroom are encouraged.

THE BEST APPROXIMATION OF A GOOD NUMERICAL METHODS COURSE

Kyle Riley, South Dakota School of Mines and Technology
Saturday, August 12, 1:00 pm – 3:00 pm

A good numerical methods course walks a fine line in covering numerical methods in enough detail to give students an appreciation of the strengths and weaknesses associated with a numerical method without a formal treatment of numerical analysis. A well chosen example, or application, will often provide a wonderful insight on a numerical method. This session seeks materials and modules that illustrate the grand benefits, or the serious pitfalls, when one employs numerical methods. Preference will be given to materials that are geared for students at the junior or senior level, however all levels are welcome.

RESEARCH INTO PRACTICE: THE TEACHING AND LEARNING OF UNDERGRADUATE MATHEMATICS

William Martin, North Dakota State University

Chris Rasmussen, San Diego State University

Michael Oehrtman, Arizona State University

Saturday, August 12, 3:15 pm – 5:15 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.

MATHEMATICAL MODELING, PROJECTS, AND DEMONSTRATIONS THAT ENHANCE A DIFFERENTIAL EQUATIONS COURSE

William P. Fox, Francis Marion University

Saturday, August 12, 3:15 pm – 5:15 pm

Differential equations is a diverse mathematical field that affords educators a great deal of flexibility in terms of content.

The course can be highly theoretical, applied, or a combination of each. This session invites novel projects, labs, or class demonstrations that enhance a differential equations course either through the facilitation of mathematical theory or exposure to interdisciplinary fields. New and interesting applications, mathematical modeling projects, or case studies are encouraged, especially those that require computational or qualitative techniques. Demonstrations may be virtual, physical or mathematical and could include, but are not limited to, novel proofs, mathlets, or physical demonstrations.

GENERAL CONTRIBUTED PAPER SESSION

Charles Ashbacher, Kirkwood Community College

Sarah J. Mabrouk, Framingham State College

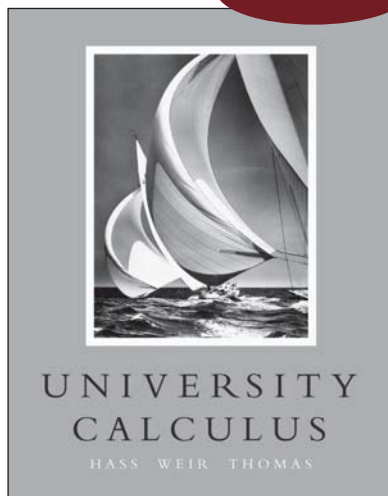
Thursday, Friday, and Saturday, August 10-12

1:00 pm – 5:15 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.

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Panels and Other Sessions

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

WORKSHOP ON TRAINING T.A.'s

David Manderscheid, University of Iowa

Thursday, August 10, 1:00 pm – 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. The session will be moderated by Diane Herrmann, University of Chicago, and Eileen Shugart, Virginia Polytechnic Institute and State University. This session is aimed at PhD students and at recent PhDs. 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 to whom they will make offers? 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.

MAKING THE CONNECTION BETWEEN RESEARCH AND TEACHING IN UNDERGRADUATE MATHEMATICS: A SAMPLE OF CHAPTERS FROM A FORTHCOMING BOOK ON MATHEMATICS EDUCATION RESEARCH

Chris Rasmussen, San Diego State University

David E. Meel, Bowling Green State University

Michael Oehrtman, Arizona State University

Thursday, August 10, 1:00 pm – 2:20 pm

Barbara Edwards, Oregon State University, and Teri Jo Murphy, University of Oklahoma, will discuss several chapters from a forthcoming book on research in undergraduate mathematics education, with emphasis on the implications of that research in the teaching of undergraduate mathematics courses. Chapters from the forthcoming volume include papers written by mathematics education researchers and by mathematicians discussing topics in the undergraduate curriculum as well as overarching issues in undergraduate mathematics education.

GEOMETRY IN THE HIGH SCHOOL CURRICULUM

Johnny Lott, University of Montana-Missoula

Thursday, August 10, 1:00 pm – 2:20 pm

Many mathematicians have fond memories of a one-year, proof-based course in Euclidean geometry. Did it ever exist and for how many students? Does that course still exist today and for how many students? What is the nature of the geometry courses offered today? The panelists will provide research-based information about how the high school geometry course has evolved over the years, what high school students have learned in that course, and how colleges and universities follow up on the high school geometry course. This will not be a session about what the high school geometry course *ought* to be, but rather evidence-based information for mathematicians involved in high school mathematics education. The panelists and their topics are as follows: Sharon Senk, Michigan State University, “How the high school course has evolved over the years”; Sharon Soucy McCrone, Illinois State University, “Research on what high school students take away from the course”; Eileen Donoghue, City University of New York, “How colleges and universities follow up on the high school geometry course”; and James King, University of Washington, “New directions in the course, such as use of software.”

SEVERAL PERSPECTIVES ON QUANTITATIVE LITERACY IN THE UNDERGRADUATE PROGRAM

Caren Diefenderfer, Hollins University

Thursday, August 10, 2:30 pm – 3:50 pm

There is a growing interest in Quantitative Literacy (QL) and Quantitative Reasoning (QR) at many levels of undergraduate education. Some institutions have opted to include QL/QR requirements in their general education requirements, others have embedded QL/QR requirements in major requirements and many others are trying to decide how to address the QL/QR needs of undergraduate students. Three different professional groups have been working with these ideas over the past 20 years. This panel will compare how summer PREP programs, the QL SIGMAA, the National Numeracy Network (NNN) and NSF funded Mathematics Across the Curriculum projects have each addressed QL/QR in the undergraduate program.

MAA SECTION OFFICERS MEETING

Thursday, August 10, 2:30 pm – 5:00 pm

This meeting will be moderated by Nancy L. Hagelgans, Ursinus College, Chair of the MAA Committee on Sections.

SIGMAA ON ENVIRONMENTAL MATHEMATICS INVITED ADDRESS

A. A. Bartlett, Department of Physics, University of Colorado Boulder

Thursday, August 10, 4:00 pm – 5:30 pm

“Arithmetic, population and energy sustainability.”

MAA PRIZE SESSION

Friday, August 11, 11:30 am – Noon

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

GÖDEL'S CONTRIBUTIONS TO THE FOUNDATION OF MATHEMATICS

Ron Barnes, University of Houston-Downtown

Linda Becerra, University of Houston-Downtown

Friday, August 11, 1:00 pm – 2:20 pm

This session is offered in recognition of the 100th anniversary of his birth. Panel participants will discuss: (1) an outline of the situation of the foundations of mathematics before Gödel's results; (2) Gödel's results and their interpretations and applications in mathematics; (3) an outline of their implications in computer science and other areas; (4) a summary list of what has evolved since Gödel's time; and (5) a consideration of what questions in the foundations of mathematics have not yet been resolved. A summary listing of results already proven or decided in the foundations of mathematics along with a companion listing of conjectures not yet resolved will be provided to the session attendees. After short presentations of the above considerations, questions from the floor will be entertained by the panelists.

ENHANCING THE TEACHING OF ADVANCED PLACEMENT STATISTICS

Murray H. Siegel, South Carolina Governor's School for Science and Mathematics

Friday, August 11, 2:30 pm – 3:50 pm

The number of students taking Advanced Placement Statistics continues to grow. Many high school mathematics teachers who teach AP Statistics were trained to teach calculus and may not have the background required to be an effective statistics teacher. This panel provides insights into activities, use of software and alternate methods of assessment that will be useful to AP Statistics teachers at all levels of experience. In addition, lessons to be learned from the 2006 AP Statistics exam will be examined.

MAA ALDER AWARDS SESSION

Friday, August 11, 3:00 pm – 4:30 pm

Presentations will be given by the 2006 Alder Award recipients. The session will be moderated by Carl Cowen, Indiana University-Purdue University Indianapolis, MAA President.

SIGMAA ON THE PHILOSOPHY OF MATHEMATICS INVITED ADDRESS

Martin Flashman, Humboldt State University

Bonnie Gold, Monmouth University

Friday, August 11, 4:45 pm – 6:15 pm

Michael D. Resnik, of the Department of Philosophy at the University of North Carolina, Chapel Hill, will speak on "Some problems and solutions in contemporary philosophy of mathematics." This talk will begin by surveying some of the major problems and positions in contemporary philosophy of math-

ematics. This will provide the background for sketching his own approach to these problems—mathematical structuralism—and some of the important objections to his view.

MAA BUSINESS MEETING

Saturday, August 12, 11:30 am - Noon

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

TOWN HALL MEETING: WHAT SHOULD FUTURE MATH MAJORS LEARN ABOUT PROOF IN HIGH SCHOOL?

Dan Teague, North Carolina School of Science and Mathematics

Saturday, August 12, 1:00 pm – 2:20 pm

This session, sponsored by SIGMAA TAHSM, will be organized as a town hall meeting. The intent is to have an open discussion between university faculty and high school teachers of advanced mathematics on the kinds of experiences and understanding about proof that future math majors should have as a part of their high school program. Many (perhaps most) future mathematics majors will have completed AP Calculus in high school. Some will have taken courses beyond that. Where and in what ways should proof be introduced to these students? Panelists will include Tom Banchoff, Brown University and Dan Teague.

GRADUATION IS COMING: NOW WHAT?

Sarah Ann Stewart, Belmont University

Joshua Laison, Colorado College

Saturday, August 12, 1:00 pm – 2:20 pm

Aimed at undergraduates, this panel session will provide information regarding career options for students with a Bachelor's degree in mathematics. This will include a discussion of careers that do not require graduate degrees, as well as a discussion of when and why to apply to graduate school. We will try to indicate what grad school is like, what courses one should have before going, what the GRE is and the importance of the subject test, what the different kinds of schools are, etc. The session is sponsored by the Young Mathematician's Network.

SUPPORTING BEGINNING MATHEMATICS TEACHER EDUCATORS: WHAT AND HOW

Gail Burrill, Michigan State University

Saturday, August 12, 3:00 pm – 4:20 pm

Preparing preservice teachers and providing professional development for those already in schools are central elements in the efforts to improve mathematics teaching and learning in the United States. The panel will consider issues and challenges beginning mathematics teacher educators face as they bridge the worlds of mathematics and education and universities and K-12 classrooms. What can the mathematics community, working with the Association of Mathematics Educators through MAA, do to support these educators as they prepare K-12 mathematics teachers? Suggestions might include developing a cadre

Panels and Other Sessions

of mentors, identifying appropriate resources, or helping build a network of colleagues who share their ideas. The goal is to create an action plan to make this or other creative suggestions happen, and input and advice from those participating in the session will help ensure that the direction we take will be successful. Panelists will include: Tim Hendrix, Meredith College; Judy Covington, Louisiana State University; Chris Rasmussen, San Diego State University; and Viji Sundar, California State University Stanislaus. The session is sponsored by the Association of Mathematics Teacher Educators (AMTE).

HOW TO GET PUBLISHED IN MAA JOURNALS

Don Albers, MAA Director of Publications

Saturday, August 12, 1:00 pm – 2:50 pm

Editors of MAA journals will provide advice on what to write and how to write for MAA journals. Panelists will include Lowell Beineke, the *College Mathematics Journal* Editor; Allen Schwenk *Mathematics Magazine* Editor; Kyle Siegrist, *Journal of Online Mathematics and its Applications* Editor; and Dan Velleman, *The American Mathematical Monthly* Editor-elect. The panel will be moderated by Dan Velleman.

WEBWORK, A WEB BASED INTERACTIVE HOMEWORK SYSTEM

Michael E. Gage, University of Rochester

Arnold K. Pizer, University of Rochester

Vicki Roth, University of Rochester

Saturday, August 12, 1:00 pm – 4:00 pm

WeBWorK is a program which allows students to do their mathematical homework interactively over the web. It is currently being used by over 100 colleges, universities and high schools in courses such as college algebra, pre-calculus to vector calculus, differential equations, linear algebra and statistics. WeBWorK can handle most homework problems typically used in such courses and is distributed with an extensive library of problems. The purpose of this session is to bring together instructors who are currently using or thinking about using WeBWorK. Several topics will be covered. There will be an introduction to WeBWorK for those unfamiliar with the system. Assessment issues (e.g. “does WeBWorK improve learning”) will be addressed. Finally we will discuss more general topics such as (1) the status of the national library of WeBWorK problems, (2) the introduction of new components such as Michigan’s Gateway Testing and (3) innovative educational uses of WeBWorK. Further information on WeBWorK and this session can be found at <http://webwork.rochester.edu>.

ORGANIZING MAA SESSIONS

Douglas Ensley, Shippensburg University

Saturday, August 12, 2:30 pm – 3:50 pm

This panel will discuss the procedures that are needed to submit a proposal to organize a contributed paper session, a minicourse or a panel session. We will discuss the deadlines for each type of session and who the proposal should be sent to. The differences between the sessions will be discussed. The session will also talk about the selection criteria for each type

of session. The panelists will include: Jimmy Buchanan, Hiram University; Sarah Mabrouk, Framingham State College; Howard Penn, U.S. Naval Academy; and Jim Tattersall, Providence College. The panel is sponsored by the MAA Coordinating Council on Meetings.

TEACHING CONTINUITY AND DIFFERENTIABILITY FOR FUNCTIONS OF ONE AND TWO VARIABLES

Dan Teague, North Carolina School of Science and Mathematics

Stephen Davis, Davidson College

Saturday, August 12, 3:00 pm – 5:00 pm

This workshop is designed for AP teachers and others teaching an introductory course in calculus. The session will consider what teachers should know about continuity and differentiability for functions of two (and more) variables that should inform their instruction in the introductory single variable course. For example, in the first course in calculus, is being differentiable different than simply having a derivative? Because of the relative simplicity of the single variable setting, are we giving students a false impression that will create problems for them later?

SUBMISSION PROCEDURES FOR CONTRIBUTED PAPER PROPOSALS

To submit an abstract for MathFest 2006, go to <http://abstracts.maa.org>. The instructions are 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 abstracts will be published in the MathFest Abstract book available at the meeting.

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, May 23, 2006. Early submissions are encouraged.

Graduate Student Activities

MathFest provides an abundant number of activities to appeal to graduate students throughout the program. The following sessions are intended specifically for the graduate student attendees. They are designed to better prepare students for life during and after graduate school.

GRADUATE STUDENT POSTER SESSION

James Freeman, Cornell College

Thursday, August 10, 3:00 pm – 4:30 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" (width) by 36" (height). Posterboards and materials for posting pages on the posters will be provided on-site. Applications should be submitted to Professor Jim Freeman, jfreeman@cornellcollege.edu, by Tuesday, June 12, 2006.

GRADUATE STUDENT RECEPTION

Thursday, August 10, 5:00 pm – 6:00 pm

This activity for graduate students is sponsored by the Committee on Graduate Students chaired by David Manderscheid,

University of Iowa. Complementary food and beverage will be served while participants socialize in an informal atmosphere.

APPLYING FOR YOUR FIRST JOB

David Manderscheid, University of Iowa

Friday, August 11, 2:30 pm – 3:50 pm

This session is aimed at PhD students and at recent PhDs. 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 to whom they will make offers? Panelists will include Sharon Clarke, Pepperdine University; James Freeman, Cornell College; and David Manderscheid, University of Iowa. The session is co-sponsored by the MAA Committee on Graduate Students and The Young Mathematicians Network.



Undergraduate 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 STUDENT RECEPTION

Wednesday, August 9, 4:30 pm – 5:30 pm

MATH JEOPARDY

John Harris, Furman University

Wednesday, August 9, 5:30 pm – 7:15 pm

Answer: An undergraduate team competition, it is a mathematical version of a popular television game show.

Question: What is Mathematics Jeopardy?

Come and watch an entertaining round of answers and questions encompassing calculus, linear algebra, differential equations, discrete mathematics, and mathematical events.

STUDENT HOSPITALITY CENTER

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

Thursday, August 10, 9:00 am – 5:00 pm

Friday, August 11, 9:00 am – 5:00 pm

Saturday, August 12, 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 student presenters, and information on MathFest activities of interest to students.

MAA STUDENT LECTURE

Richard Tapia, Rice University

Thursday, August 10, 1:00 pm – 1:50 pm

See the Invited Address section for details.

MAA STUDENT PAPER SESSIONS

Edward C. Keppelmann, University of Nevada

J. Lyn Miller, Slippery Rock University

Thursday, August 10, 2:00 pm – 6:15 pm

Friday, August 11, 2:00 pm – 5:00 pm

PI MU EPSILON STUDENT PAPER SESSIONS

Angela Spalsbury, Youngstown State University

Thursday, August 10, 2:00 pm – 6:15 pm

Friday, August 11, 2:00 pm – 5:00 pm

MAA UNDERGRADUATE STUDENT ACTIVITIES SESSION

WEIRD MULTIPLICATION AND WEIRD WAYS TO MULTIPLY

James Tanton, St. Mark's Institute of Mathematics/
St. Mark's School

Friday, August 11, 1:00 pm – 1:50 pm

What's four times three? Twelve you might think – but no more! In a new fun-filled action-packed system of arithmetic worthy

of much mathematical investigation four times three is eighteen, the square root of 100 is six, and two times five is ten. (Hang on. That's not weird!) Let's spend an hour working out 5716×8945 together five different ways. What could be more fun?

PME-MAA STUDENT BANQUET AND AWARDS CEREMONY

Friday, August 11, 6:15 pm – 7:45 pm

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

PME J. SUTHERLAND FRAME LECTURE ELLIPSES AND CIRCLES? TO UNDERSTAND VOTING PROBLEMS??!

Donald Saari, University of California at Irvine

Friday, August 11, 8:00 pm – 9:00 pm

See the Invited Address section for details.

STUDENT PROBLEM SOLVING COMPETITION

Richard Neal, American Society for the Communication of Mathematics

Saturday, August 12, 1:00 pm – 2:15 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.

MATH HORIZONS SPECIAL SESSION

Arthur T. Benjamin, Harvey Mudd College

Jennifer Quinn, Association for Women in Mathematics

Saturday, August 12, 2:30 pm – 3:00 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.

MAA MATHEMATICAL CONTEST IN MODELING (MCM) WINNERS

Ben Fusaro, Florida State University

Saturday, August 12, 3:15 pm – 4:30 pm

About 450 teams, each consisting of three undergraduates, took part in the 2006 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.

Special information for students can be found at MAA Online at <http://www.maa.org> and <http://www.pme-math.org>.

Minicourses

Minicourses offer four hours of focused instruction. The Knoxville minicourses were coordinated by Joe Straight, SUNY Fredonia. Enrollment is limited and a separate registration fee is required. Refer to registration information for details.

MINICOURSE #1

EULER

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

Part 1: Thursday, August 10, 1:00 pm – 3:00 pm

Part 2: Friday, August 11, 1:00 pm – 3:00 pm

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

MINICOURSE #2

INFUSING CONNECTIONS INTO CORE COURSES FOR SECONDARY TEACHERS

Steve R. Benson, Education Development Center and University of New Hampshire

Karen J. Graham, University of New Hampshire

Part 1: Thursday, August 10, 1:00 pm – 3:00 pm

Part 2: Friday, August 11, 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 #3

CONTEMPORARY COLLEGE ALGEBRA: A REFOCUSED COLLEGE ALGEBRA COURSE

Laurette Foster, Prairie View A&M University

Paul Dirks, Miami Dade Community College

Don Small, U.S. Military Academy

Part 1: Thursday, August 10, 3:30 pm – 5:30 pm

Part 2: Saturday, August 12, 1:00 pm – 3:00 pm

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

MINICOURSE #4

FAIR DIVISION:

FROM CAKE-CUTTING TO DISPUTE RESOLUTION

Steven J. Brams, New York University

Part 1: Thursday, August 10, 3:30 pm – 5:30 pm

Part 2: Saturday, August 12, 1:00 pm – 3:00 pm

Cutting a cake, dividing up property in an estate, determining the borders in an international dispute – such problems of fair division are ubiquitous. Rigorous procedures for allocating goods (or "bads," like chores), or deciding who wins on what issues in disputes, will be analyzed, starting with the well-known cake-cutting procedure of "I cut, you choose." Particular attention will be given to procedures that produce "envy-free" allocations, in which everybody thinks he or she received the largest portion and hence does not envy anybody else. Results obtained in the last five years will be highlighted. Applications to real-life conflicts, from interpersonal to international, will be discussed.

MINICOURSE #5

COMBINATORIALLY THINKING

Arthur T. Benjamin, Harvey Mudd College

Jennifer J. Quinn, Association for Women in Mathematics

Part 1: Friday, August 11, 3:30 pm – 5:30 pm

Part 2: Saturday, August 12, 3:30 pm – 5:30 pm

Faced with an identity, how do you create a combinatorial proof? This hands-on minicourse will provide you with some useful combinatorial interpretations, well-selected examples, and the challenge of finding your own combinatorial proofs. Along with numbers that are defined through counting (binomial coefficients, Stirling numbers, Catalan numbers), you will acquire a combinatorial appreciation for quantities like harmonic numbers, continued fractions, determinants, Fibonacci numbers, and the golden ratio. An extensive list of identities – some with known interpretations and others without – will serve as the basis for your exploration. Of course, you are welcome to bring along your personal favorites to add to the excitement.

MINICOURSE #6

TEACHING A PROOF-BASED COURSE AS THE GATEWAY TO THE MATHEMATICS MAJOR

James Sandefur, Georgetown University

Part 1: Friday, August 11, 3:30 pm – 5:30 pm

Part 2: Saturday, August 12, 3:30 pm – 5:30 pm

Many colleges and universities have a gateway course to help mathematics students make the transition to more theoretical courses, with a goal of helping students learn how to understand and construct proofs. The organizer of this course, guided by 5 years of videotaping his students doing their homework for a proof-based course, will lead participants in an exploration of effective approaches to teaching "proof." We will discuss appropriate types of problems, the wording of problems, effective hints and prompts, and a variety of pedagogical approaches. Suggestions and questions from participants will be encouraged.

Short Course

Short Courses are organized around relevant themes and will be held immediately preceding the public sessions of MathFest.

TWO-DAY SHORT COURSE

ENVIRONMENTAL MODELING

The MAA MathFest Short Course is presented in honor of William F. Lucas.

Ben Fusaro, Florida State University

Part 1: Tuesday, August 8, 9:00 am – 5:00 pm

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

The goal of this two-day course is to introduce college teachers to a variety of topics in environmental mathematics and to the opportunities that this emerging field provides to interact with the larger society. Ben Fusaro has been active in lecturing, writing, and organizing activities in environmental mathematics since 1984. He will do the introduction and wrap-up.

LECTURE 1

Measuring Pollution

Fred S. Roberts, DIMACS Center Rutgers University

Finding simple ways to measure the amount of pollution in the air we breathe, the water we drink, or the sounds we hear, has long been a goal of environmental scientists. We will discuss pollution indices in the context of a more general discussion of the theory of meaningful and meaningless statements and scales of measurement. A statement involving scales of measurement is called meaningless if its truth or falsity can depend on the particular versions of scales which are used in the statement. We will develop the theory and apply it to measurement of air, water, and noise pollution. We will discuss the possibility of averaging different measures of pollution in a meaningful way, or of combining different measures of pollution to get a consensus measure. We will also describe the use of expert judgments to assess pollution levels and describe ways to combine these judgments in the context of mathematical models of the level of air pollution and energy use in cities.

LECTURE 2

Optimal Control of Environmental Models

Suzanne Lenhart, University of Tennessee – Knoxville

This is an introduction to optimal control of systems of ordinary differential equations that model environmental processes. Examples will be taken from population, disease and the bacterial control of pollutants.

LECTURE 3

Modeling Oil Reserves

Catherine A. Roberts, College of the Holy Cross

The challenge of modeling oil supply and production is interdisciplinary, calling upon geology and environmental science, as well as mathematics. The issue is also laced with political and philosophical perspectives on the nature of our relation-

ship with the planet. This talk will introduce this topic at a level suitable for a liberal arts course in mathematical modeling or environmental science. Models that provide insight into how oil production schemes impact this natural resource will be developed and discussed. As a specific example, the speaker will describe a model tied to oil drilling in the Arctic National Wildlife Refuge.

LECTURE 4

A Mathematical Look at Extinction

Roland H. Lamberson, Humboldt State University

We will explore some mathematical models in ecology with particular interest in the probability of extinction. We will look at measures of vulnerability, risky management strategies and how reliably models can predict the viability of a species. Species of interest will include blue whales, northern spotted owls and Pacific salmon.

LECTURE 5

Clutching for Survival: The California Condor Restoration Project

Thomas O'Neil

California Polytechnic State University - San Luis Obispo

Since 1999, several Cal Poly students and I have been providing support to the Ventana Wilderness Society in their effort to establish a flock of California condors in the Big Sur area. A good recovery strategy requires an accurate population projection program. Unfortunately, there are several condor traits that make construction of such a program difficult. We will discuss these traits and how we have overcome many of the problems. Additionally, there is a lack of data. Critical to any population projection program is the survival rate data. There are estimates that can be used for first approximations but these data are based on observations of small populations of wild condors. Little was known of how the captive bred and reared birds will fare in the wild. To help in this area, we created a database of every California condor in captivity or in the wild, living or dead since 1987, the year the last wild condor was brought into captivity. We will discuss the problems encountered in creating this database and getting it into a format that has made it a useful tool for the biologists in the condor recovery project.

LECTURE 6

From Mathematics to Environmental Consulting

Charles Hadlock, Bentley College

Environmental consulting includes the use of modeling and encompasses a considerable range of activities depending on both the nature of the client organization and the objective of the investigation. For example, regulatory and legal cases might be conducted very differently from scientific and engineering investigations. The speaker will discuss his experience in a wide range of consulting assignments and will also suggest ways that mathematicians can involve themselves in this kind of work.

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 QUANTITATIVE LITERACY PANEL SEVERAL PERSPECTIVES ON QUANTITATIVE LITERACY IN THE UNDERGRADUATE PROGRAM

Caren Diefenderfer, Hollins University

Thursday, August 10, 2:30 pm – 3:50 pm

See Panels and Other Session for more details.

SIGMAA ON ENVIRONMENTAL MATHEMATICS INVITED ADDRESS

Ben Fusaro, Florida State University

Thursday, August 10, 4:00 pm – 5:30 pm

A.A. Bartlett, Department of Physics, University of Colorado; Boulder will speak on “Arithmetic, population and energy sustainability.” Dr. Bartlett’s talk will be followed by a SIGMAA EM business meeting.

SIGMAA ON STATISTICS EDUCATION PANEL ENHANCING THE TEACHING OF ADVANCED PLACEMENT STATISTICS

Murray H. Siegel, South Carolina Governor’s School for Science and Mathematics

Friday, August 11, 2:30 pm – 3:50 pm

See Panels and Other Session for more details.

SIGMAA ON THE PHILOSOPHY OF MATHEMATICS INVITED ADDRESS

Martin Flashman, Humboldt State University

Bonnie Gold, Monmouth University

Friday, August 11, 4:45 pm – 6:15 pm

See Panels and Other Session for more details.

SIGMAA ON TEACHING ADVANCED HIGH SCHOOL MATHEMATICS ANNUAL BUSINESS MEETING AND RECEPTION

Dan Teague, North Carolina School of Science and Mathematics

Friday, August 11, 5:00 pm – 6:30 pm

SIGMAA TAHSM will hold in its annual business meeting at MathFest 2006. 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 TEACHING ADVANCED HIGH SCHOOL MATHEMATICS TOWN HALL MEETING WHAT SHOULD FUTURE MATH MAJORS LEARN ABOUT PROOF IN HIGH SCHOOL?

Dan Teague, North Carolina School of Science and Mathematics

Saturday, August 12, 1:00 pm – 2:20 pm

See Panels and Other Session for more details.

SIGMAA ON ENVIRONMENTAL MATHEMATICS GEOLOGY TRIP

Ben Fusaro, Florida State University

Saturday, August 12, 1:30 pm – 5:30 pm

Gareth Davies, Cambrian Groundwater Co., Oak Ridge, Tennessee will conduct the field trip.

SIGMAA ON TEACHING ADVANCED HIGH SCHOOL MATHEMATICS WORKSHOP

TEACHING CONTINUITY AND DIFFERENTIABILITY FOR FUNCTIONS OF ONE AND TWO VARIABLES

Dan Teague, North Carolina School of Science and Mathematics

Stephen Davis, Davidson College

Saturday, August 12, 3:00 pm – 5:00 pm

See Panels and Other Session for more details.

SIGMAA ON RESEARCH IN MATHEMATICS EDUCATION CONTRIBUTED PAPER SESSION RESEARCH INTO PRACTICE: THE TEACHING AND LEARNING OF UNDERGRADUATE MATHEMATICS

William Martin, North Dakota State University

Chris Rasmussen, San Diego State University

Michael Oehrtman, Arizona State University

Saturday, August 12, 3:15 pm – 5:15 pm

See Contributed Paper Sessions for more details.

Project NExT

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

Faculty for whom the 2006-2007 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.

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 17, 2006. 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 2006 is restricted to those who applied and were selected as Project NExT Fellows. Those chosen as 2006-07 Fellows will receive notification and an invitation to participate in the program.

Project NExT Workshop for 2005-2006 and 2006-2007 Fellows

Monday, August 7 th	1:30 pm – 9:00 pm (for 2006-07 Fellows)
Tuesday, August 8 th	8:30 am – 5:25 pm (for 2006-07 Fellows)
Wednesday, August 9 th	8:15 am – 5:30 pm (for 2005-06 and 2006-07 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;
- Using writing and student presentations to teach mathematics;
- Involving undergraduates in mathematical research;
- Alternative methods of assessing student learning;
- Effective strategies for preparing future teachers;
- 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 2007 Joint Mathematics Meetings, and a one-day workshop and the MAA MathFest in the summer of 2007. There is no fee for participation in Project NExT itself, and the 2006-07 Fellows will be provided with room and board at the Project NExT Workshop in Knoxville.

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, The Association of Mathematics Teacher Educators, The Association for Symbolic Logic, MAA Sections, and the Greater MAA fund.

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 2006 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.

Scavenger Hunt

Participate this year in the Exhibit Hall Scavenger Hunt. Complete the scavenger hunt form found in your registration packet to become eligible to win great prizes. The drawings will be held in the exhibit hall. Specific drawing times will be listed in the MathFest Program. See you there!

Exhibit Hall Lunch Break

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 11th.

LOCATION:

**Knoxville Convention Center
Ballroom E, F, G**

EXHIBIT HOURS:

Thursday, August 10, 2006	9:00 am – 5:00 pm
Friday, August 11, 2006	9:00 am – 5:00 pm
Saturday, August 12, 2006	9:00 am – 2:00 pm

Exhibitors

American Mathematical Society

Addison-Wesley **Sponsor**

A K Peters, Ltd.

Birkhauser

Brooks/Cole, Thomson

Cambridge University Press

Educo International, Inc.

Hawkes Learning Systems

Houghton Mifflin Company

Key College Curriculum **Sponsor**

Mathematical Association of America - American Mathematics Competition

Mathematical Association of America - Development

Mathematical Association of America - Membership

Mathematical Association of America – Publications

Prentice Hall

Springer

Texas Instruments, Inc.

WebAssign

W. H. Freeman & Company

Wiley

Marsh Affinity **Sponsor**



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.

GREAT SMOKY MOUNTAINS ARTS AND CRAFTS COMMUNITY TOUR

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

Beneath the natural beauty of Gatlinburg and the Great Smoky Mountains lies the colorful lore of Tennessee history and times gone by, dating back to even before the founding of our country. Many of the specialty shops that you will visit on this tour cling to that heritage in the utilitarian craftsmanship and artistic renderings of their wares. Stop and browse through the shops at Glades Village, Clift Dwellers, Morning Mist and the Glades Art & Craft Center. You'll leave with a newfound appreciation for the assemblage of fine art available in the Smokies.

Lunch will be on your own at one of the many restaurants at Walden's Landing featuring Calhoun's Restaurant, Atlanta Bread Company and the Smoky Mountain Brewery. Attendees, guests and spouses will have a shopping experience like no other. This tour includes an expert tour guide. Tickets are \$45 per person.

OPENING RECEPTION

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

Continue the exciting evening by joining new and long-time friends and colleagues for a banquet dinner. There will be an after-dinner presentation by Art Benjamin of Harvey Mudd College entitled "Mathemagics!" Art is a mathematician and a magician. In this performance, he will demonstrate and explain how to mentally multiply numbers faster than a calculator, how to memorize pi to 100 places, how to calculate the day of the week of any date in history, and other amazing feats of mind. He has presented his mixture of math and magic to audiences all over the world. Serving as Master of Ceremonies will be Ed Burger of Williams College. Tickets are available **ONLY** through advanced registration.

The Buffet Dinner will include a selection of salads, soup; Herb Crusted Salmon Filet on a Dill Buerre Blanc, Rosemary Roasted Prime Rib of Beef Au Jus, Chef's Special Vegan Entrée, accompaniments, and a dessert buffet. A cash bar will be available. Tickets are \$35 per person.

GRADUATE STUDENT RECEPTION

Thursday, August 10, 5:00 pm – 6:00 pm

This activity for graduate students is sponsored by the Committee on Graduate Students chaired by David Manderscheid, University of Iowa. Complementary food and beverage will be served while participants socialize in an informal atmosphere.

TENNESSEE RIVERBOAT DINNER CRUISE

Thursday, August 10, 6:00 pm - 9:00 pm

Join us aboard the Star of Knoxville for a festive and entertaining dinner cruise! This authentic, Mississippi-style paddle wheeler will carry you down the Tennessee River, offering a climate controlled main deck and an open-air upper deck for enjoying the scenic Tennessee River. Dinner will be served and a cash bar will be provided. After dinner, sit back and enjoy the view or dance the night away to a local Bluegrass Band. *Tickets are \$45 per person.*

EXHIBIT HALL RECEPTION

Friday, August 11, 3:00 pm – 4:00 pm

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

PME-MAA STUDENT BANQUET AND AWARDS CEREMONY

Friday, August 11, 6:15 pm - 7:45 pm

Everyone is invited to join PME Members, MAA Student Chapter members and their families for a dinner to honor and network with students. After the banquet you are encouraged to attend the popular PME J. Sutherland Frame Lecture, given this year by Donald Saari, University of California Irvine, on "Ellipses and Circles? To Understand Voting Problems?!" at 8:00 pm.

Dinner offers the following choices: California Salad, Pistachio Crusted Salmon, Chicken Parmesan or a Chef's Special Vegetarian option entrée, and Raspberry Trifle. Purchasing tickets through advanced registration is recommended, since only a limited number of tickets will be available for sale on site. Tickets are \$20 per person for Undergraduate Students and Student Paper Presenters and \$25 per person for all others.

DON ALBERS: AN APPRECIATION BANQUET

Friday, August 11, 6:00 pm - 8:00 pm

Join the mathematical community in congratulating Don Albers, Associate Executive Director, and Director of Publications. Don is stepping down from his current position to become the first ever Senior Acquisitions Editor for the MAA. Don has served the MAA for over 25 years: as editor of the *College Mathematics Journal*, as founding editor of *Math Horizons*, as Chair of the Committee on Publications, and since 1991, as Director of Publications and Associate Executive Director.

The Buffet Dinner will include a selection of salads, soup; Pistachio Topped Halibut with Honey-Frangelico Sauce, Roast Sirloin with Wild Mushroom Sauce, Chef's Special Vegan Entrée, accompaniments, and a dessert buffet. A cash bar will be available. Tickets are \$35 per person.

AWM-MAA RECEPTION

Friday, August 11, 9:00 pm - 11:00 pm

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

MAA SILVER AND GOLD BANQUET

Saturday, August 12, 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 Lida Barrett, University of Tennessee (ret.). Carl Pomerance MAA Vice-President from Dartmouth College will speak on "Primal Screens." There will be a cash-bar reception beginning at 6:00 pm with the banquet following at 6:30 pm.

Dinner offers the following choices: Endives and Poached Pear Salad, Sliced Roast Tenderloin of Beef with Wild Mushroom Ragout, Smoked cheddar Duchess Potatoes, Green Beans Almondine, Banana and Chocolate Bread Pudding with dark rum crème anglaise and fresh berries. A Chef's Special Vegetarian option will also be available. Purchasing tickets through advanced registration is recommended, since only a limited number of tickets will be available for sale on site. Tickets are \$42 per person.

TOUR OF CADES COVE/SMOKY MOUNTAINS

Sunday, August 12th, 9:00 am - 4:00 pm

The 11-mile Cades Cove loop features magnificent vistas of the Smoky Mountains. Following the grades and turns of the old wagon roads, and fording a stream now and then, you will explore homesteads, churches and graveyards of early pioneers in the 1800s who settled this land. Along the way you are likely to see wildlife such as deer and wild turkey that inhabit the cove year-round.

Approximately mid-way through the tour there will be a scheduled stop for lunch at the Cable Mill and Farmhouse. Space is limited so register early. Tickets are \$49 per person.

Great Smoky Arts & Crafts Community Tour **Wednesday, August 9th • 9:00 am - 4:00 pm**

Fly in early!

Beneath the natural beauty of Gatlinburg and the Great Smoky Mountains lies the colorful lore of Tennessee history and times gone by, dating back to even before the founding of our Country. Many of the specialty shops that you will visit on this tour cling to that heritage in the utilitarian craftsmanship and artistic renderings of their wares. Stop and browse through the shops at Glades Village, Clift Dwellers, Morning Mist and the Glades Art & Craft Center. You'll leave with a newfound appreciation for the assemblage of fine art available in the Smokies.

Lunch will be on your own at one of the many restaurants at Walden's Landing featuring Calhoun's Restaurant, Atlanta Bread Company and the Smoky Mountain Brewery. This tour includes an expert tour guide.

Attendees, guests and spouses will have a shopping experience like no other.

PRICE PER PERSON: \$45

General Information

REGISTRATION INFORMATION

REGISTRATION DESK:

The registration desk will be located in the Cumberland Lobby of the Knoxville Convention Center outside Ballroom E. It will be open Wednesday, August 9 from noon to 7:00 PM, Thursday, August 10 and Friday, August 11 from 8:00 AM to 4:00 PM, and Saturday, August 12 from 8:00 AM to 2:00 PM. You may pick up your registration materials, register on-site, and purchase event tickets, when available, at this location.

	By 6/23	After 6/23
Member Registration fee	\$200	\$257
Nonmember	\$288	\$367
Grad Student	\$42	\$52
Undergraduate Student	\$26	\$31
Unemployed	\$42	\$52
Individual from a		
Developing Country	\$42	\$52
K-12 Teacher	\$42	\$52
Emeritus member	\$42	\$52
One-Day (Th, F, S)	\$104	\$104
High School Student	\$10	\$10
Guest	\$15	\$15
Minicourses	\$60	\$70
Short Course		
MAA or AMS Member and MathFest Participant	\$125	\$140
Non-Member or Short Course Only	\$175	\$190
Students	\$ 50	\$ 60

EARLY BIRD REGISTRATION:

Register by June 23 to take advantage of the early bird savings and you may choose to receive your registration packet before the meeting. Registration packets will be mailed first class during the week of July 3 and there will be no need to come to the registration desk once you arrive.

REGULAR REGISTRATION:

Advance Registration received between June 23 and July 28 will be processed at the regular registration rate. Participants registering during this period must pick up their registration packets onsite at the registration desk. After July 28, participants must register on-site at the registration desk.

ONLINE REGISTRATION:

Register on the Internet for MathFest, Project NExT, and hotel reservations. Go to <http://www.maa.org> and click on "MathFest 2006." Credit card payment is required for Internet registration. MasterCard and Visa are accepted.

MATHFEST CANCELLATIONS:

MathFest cancellations must be received by August 4 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 must be received by July 28. Enroll early; space is limited! If a course is full, you will be notified. On-site registration is allowed if minicourse and short course space allows. 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 August 4 to receive a 50% refund.

PAYMENT

The MAA will coordinate housing for MathFest at the Hilton Knoxville and Holiday Inn Select Downtown. 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:

Meetings Department
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. 430
Email: blane@maa.org

MATHFEST HOUSING:

The headquarters hotel for MathFest is the Hilton Knoxville located at 501 West Church Avenue. Rooms may be reserved at the Hilton Knoxville and the Holiday Inn Select at the Convention Center. The MAA has guaranteed sleeping rooms at the Hilton and Holiday Inn Select. **Please book your Hotel Reservation through the MAA. Thank You!**

Reservations

All rates are subject to a 16.25% room sales 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 so participants are advised to reserve rooms as early as possible.

Headquarters Hotel: The Hilton Knoxville

Reservations at the Hilton Knoxville may be made through the MAA via the MathFest Registration/Housing 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 10, 2006. After July 10, participants must arrange their own housing.

501 W. Church Ave.
Knoxville, Tennessee 37902
\$124.00 single/double
(Reservations through MAA only until July 10, 2006)

The newly-renovated Hilton Knoxville hotel is situated in the heart of downtown, the gateway to scenic East Tennessee. With a covered sky bridge to the Knoxville Convention Center, a short walk to the University of Tennessee campus, views of the Tennessee River and Neyland Stadium, and perfectly situated in the downtown business district, the Hilton Knoxville hotel is convenient to it all. To better serve the needs of guests, the Hilton Knoxville hotel offers complimentary high-speed wireless internet access in all hotel guest rooms and public space, a new business center, recently-expanded exercise facility, executive level, Starbucks® coffee shop in the hotel lobby, access to the neighboring YMCA, and much more.

The contemporary decor in each of the spacious Hilton hotel guest rooms offers the finest in modern amenities, as well as spectacular views of the Great Smoky Mountains. The Hilton Knoxville restaurant, The Market Cafe, serving breakfast and lunch, offers the finest of American Cuisine in a casually elegant atmosphere. Marty's Bistro, open for dinner Monday through Saturday, concentrates on regional ingredients and classical presentation. Guests can also wind down in the hotel lounge, The Orange Martini. The Hilton hotel's recreational facilities include a newly-expanded on-site exercise room and a seasonal outdoor pool & sundeck. The avid golfer will enjoy

being positioned within 30 minutes of 16 beautifully maintained golf courses. Water skiing and boating are available within a 30-minute drive.

The Hilton hotel in Knoxville, Tennessee is just a short 45-minute drive from the Great Smoky Mountain National Park. The Hilton Knoxville is within walking distance of Market Square, and only one block from the site of the 1982 World's Fair.

Parking

Daily Self Parking Fee: \$6.00 (USD)

Daily Valet Parking Fee: \$10.00 (USD)

In and out privileges available.

The Holiday Inn Select Downtown

525 Henley Street
Knoxville, TN 37902
\$63.00 single/\$73 double
(Reservations through MAA only until July 10, 2006)

The Holiday Inn Select Hotel - Knoxville is located at beautiful World's Fair Park, home of the 1982 World's Fair. It is conveniently situated in downtown Knoxville, connected to Knoxville Convention and Exhibition Center. The Hotel was recently renovated in 2004.

The Holiday Inn Select Hotel is within walking distance to the Knoxville Museum of Art, The Candy Factory, Fort Kid, and the University of Tennessee. Also in walking distance are the Market Square and the Old City districts which boast terrific local eateries, nightlife and shopping. Other great Knoxville attractions include the Women's Basketball Hall of Fame, The Knoxville Zoo, Knoxville's Volunteer Landing and the Star of Knoxville Riverboat on the Tennessee River.

Amenities include indoor pool, high-speed internet access, business center, concierge services, iron/ironing board, coffee maker, cocktail lounge, and restaurant.

Parking

Daily Parking Fee: \$6.00 (USD)

Above ground parking is available for vans, SUV's and other large vehicles. In and out privileges available.

General Information

TRAVEL INFORMATION:

AIRLINE INFORMATION:

United Airlines is the official airline for MathFest 2006. To obtain a discounted fare on United Airlines make your reservations by calling 1-800-521-4041 between the hours of 8:00 am and 10:00 pm, Eastern Time. Please be sure to refer to **United Airlines Meeting ID Number 530XB**.

McGhee Tyson Airport is the closest airport and is located approximately 15 minutes from the Hilton Knoxville, Knoxville Convention Center and the University of Tennessee Conference Center.

BY TRAIN: AMTRAK

Knoxville does not have an AMTRAK station or service. Listed below are the nearest stations:

Toccoa, GA- 101.32 miles
Clemson, SC – 108.22 miles
Greenville, SC – 114.6 miles
Gainesville, GA – 115.96 miles
Spartanburg, SC – 132.3 miles

If you need immediate attention concerning a reservation, please call a service representative at **1-800-USA-RAIL (1-800-872-7245) or TDD/TTY (1-800-523-6590)**.

BY BUS: Greyhound Knoxville

(865)-524-0369
100 E Magnolia Ave
Knoxville, TN 37917

The Knoxville Greyhound station is located 10 blocks from the Hilton Knoxville.

DRIVING DIRECTIONS:

From McGhee Tyson Airport

To: Knoxville Convention Center north on Highway 129 (Alcoa Highway) approximately 15 miles until the connection with I-40 East, merge onto I-40 East and exit immediately at exit 388/Henley Street. Move into the left lane and follow exit marked Henley Street.

To: Holiday Inn Select Downtown north on Highway 129 (Alcoa Highway) approximately 15 miles until the connection with I-40 East, merge onto I-40 East and exit immediately at exit 388/Henley Street. Move into the right lane and turn right on Clinch Avenue to enter the hotel.

To: Hilton Knoxville north on Highway 129 (Alcoa Highway) approximately 15 miles until the connection with I-40 East, merge onto I-40 East and exit immediately at exit 388A/Henley

Street. Move into the far left lane and at the second stop light turn left onto West Church Avenue—hotel will be one block ahead on Walnut Street.

CAR RENTAL INFORMATION:

Avis and Budget have been selected as the official car rental companies for MathFest 2006. When making your reservations you must use **Avis Meeting Discount Number K019303** or **Budget Meeting Discount Number X914201** for the discounted meeting rate. Rates are available from August 7, 2006 to August 15, 2006. Reservations can be made by telephone (877) 289-2611 for AVIS or 1-800-214-6092 for Budget.

DAILY SHUTTLE INFORMATION:

No daily shuttle will be required for MathFest 2006. The location of the Hilton Knoxville, Knoxville Convention Center and the University of Tennessee Conference Center are within a two block radius of each other. However, the Knoxville Tourism & Sports Corporation, Gentry-Trailways and Simon Properties will sponsor a free shuttle to a local shopping mall.

A shuttle bus will be traveling between the Knoxville Convention Center and the West Town Mall. Busses will begin operating on Wednesday, August 9th at 11:00 AM. They will depart from the Convention Center on the hour and the West Town Mall on the half hour.

The schedule is being finalized and will be posted on <http://www.maa.org/mathfest> and in the Program Book. Please note that the West Town Mall is approximately a 20 minute drive from the Convention Center. A mall directory can be found at <http://www.simon.com/mall/directory.aspx?ID=202>.

PUBLIC TRANSPORTATION:

Knoxville Area Transit (KAT) city bus service **865-215-7800**. Printable schedules are available at <http://www.ci.knoxville.tn.us/kat>.

KAT provides regular, fixed route bus service throughout the City of Knoxville and portions of Knox County.

Hours of operation (including Night Rider / Sunday Rider service)

Monday - Friday:

(5:30 a.m. - 12:30 a.m.)

Saturday:

(6:30 a.m. - 12:30 a.m.)

Sunday:

(11:00 a.m. - 7:00 p.m.)

General Information

Knoxville Trolley Lines, a FREE downtown trolley service, provides a convenient way to see all the attractions in the downtown area.

The trolley service also connects to the (KAT) for trips outside of the downtown area, including malls, parks and other attractions.

Hours of operation: Monday - Friday (7 a.m. to 6 p.m.)

In addition, a Late Line Trolley operates every 15 minutes on Friday and Saturday nights (8 pm - 2 am) with service to Knoxville's historic Old City, the Knoxville Convention Center and other entertainment spots. A Trolley map can be found at http://www.ci.knoxville.tn.us/kat/web%20pages/trolley/Trolley_Map.asp.

TAXI INFORMATION:

Airport Shuttle & Taxi Service

Chariots of Hire offers scheduled shuttle services to and from the McGhee Tyson Airport for \$15/person, one way or \$22 round trip. Tickets for the shuttle can be reserved in advance by calling 1-800-287-5934 or by sending an e-mail to cohlino@chariotsofhire.com. There are regularly scheduled services from the airport and the downtown hotels, starting at 10:00 am, operating in 45 minute intervals, with the last shuttle leaving the airport at 11:30 pm. Shuttles departing from the hotel to the airport will run from 4:00 am to 4:00 pm.

Taxi service is also available. The cost is \$25 one-way and \$2 for each additional person. Taxi stands can be found outside baggage claim.

These links are provided as a convenience:

Knoxville Visitor Information

<http://www.knoxville.org>

Trolley Schedule

<http://www.ci.knoxville.tn.us/kat>

Public Transportation Schedule

<http://www.ci.knoxville.tn.us/kat>

Airline/Airport Information

<http://www.tys.org>

Restaurant Information

<http://www.knoxville.org> and <http://www.knoxmenus.com>

University of Tennessee Information

<http://www.utk.edu>

State of Tennessee Information

<http://www.state.tn.us>



Photo courtesy of Richard Weisser and SmokyPhotos.com

Program at a Glance

MONDAY, AUGUST 7TH

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

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

TUESDAY, AUGUST 8TH

8:00 am – 5:00 pm Project NExT Registration

8:30 pm – 5:25 pm Project NExT Workshop

9:00 am – 5:00 pm **Part 1: Two-Day Short Course**
Environmental Modeling
Ben Fusaro, Florida State University

WEDNESDAY, AUGUST 9TH

8:00 am – 5:00 pm Project NExT Registration

8:15 am – 5:30 pm Project NExT Workshop

9:00 am – 4:00 pm **Great Smoky Mountains Arts and Crafts Community Tour**

9:00 am – 5:00 pm **Part 2: Two-Day Short Course**
Environmental Modeling
Ben Fusaro, Florida State University

4:30 pm – 5:30 pm **MAA/PI MU EPSILON Student Reception**

5:30 pm – 7:15 pm **Math Jeopardy**
John Harris, Furman University

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

7:30 pm – 9:30 pm **Opening Banquet**

THURSDAY, AUGUST 10TH

8:30 am – 9:20 am **MAA Invited Address**
The Circle (and Knot and Link) of Life: How Topology Untangles Knotty DNA Questions
Dorothy Buck, Imperial College London

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

9:00 am - 5:00 pm **Student Hospitality Center**
Richard and Araceli Neal, American Society for the Communication of Mathematics

9:30 am - 10:20 am **MAA Invited Address**
Hedrick Lecture Series
What is Arithmetic Combinatorics?

Lecture 1: The Background: Some Theorems and Open Problems in Number Theory, Analysis, and Combinatorics
W.T. Gowers, Cambridge University

10:30 am – 11:20 am **MAA Invited Address**
Some Open Questions About Convex Polyhedra
Jesus A. De Loera, University of California Davis

1:00 pm – 1:50 pm **MAA Student Lecture**
Math at Top Speed: Exploring and Breaking Myths in Drag Racing Folklore
Richard Tapia, Rice University

1:00 pm – 2:20 pm **Panels and Other Sessions**
Geometry in the High School Curriculum
Johnny Lott, University of Montana-Missoula

1:00 pm – 2:20 pm **Panels and Other Sessions**
Making the Connection Between Research and Teaching in Undergraduate Mathematics: A Sample of Chapters from a Forthcoming Book on Mathematics Education Research
Chris Rasmussen
San Diego State University
David E. Meel
Bowling Green State University
Michael Oehrtman, Arizona State University

1:00 pm – 2:20 pm **Panels and Other Sessions**
Workshop on Training T.A.'s
David Manderscheid, University of Iowa

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

1:00 pm – 3:00 pm **Contributed Paper Session**
Examples That Use Abstract Algebra in Other Disciplines in Mathematics
Tyler J. Evans, Humboldt State University

1:00 pm – 3:00 pm **Invited Paper Session**
Inquiry Based Learning – The Next Generation
Edward B. Burger, Williams College

1:00 pm – 3:00 pm **Minicourse #1: Part 1**
Euler
William W. Dunham, Muhlenberg College
Edward C. Sandifer
Western Connecticut State University

1:00 pm – 3:00 pm	Minicourse #2: Part 1 <i>Infusing Connections into Core Courses for Secondary Teachers</i> Steve R. Benson, Education Development Center and University of New Hampshire Karen J. Graham University of New Hampshire	<i>Anniversary Commemoration</i> Linda Becerra University of Houston-Downtown Ron Barnes University of Houston-Downtown	
1:00 pm – 4:30 pm	Invited Paper Session <i>Computational Convexity and its Applications</i> Jesus De Loera University of California Davis Tyrrell McAllister University of California Davis	3:30 pm – 5:30 pm Minicourse #3: Part 1 <i>Contemporary College Algebra: A Refocused College Algebra Course</i> Laurette Foster Prairie View A&M University Paul Dirks Miami Dade Community College Don Small, U.S. Military Academy	
1:00 pm – 5:15 pm	General Contributed Paper Session Charles Ashbacher Kirkwood Community College Sarah J. Mabrouk Framingham State College	3:30 pm – 5:30 pm Minicourse #4: Part 1 <i>Fair Division:</i> <i>From Cake-Cutting to Dispute Resolution</i> Steven J. Brams, New York University	
2:00 pm - 6:15 pm	MAA Student Paper Sessions Edward C. Keppelmann University of Nevada J. Lyn Miller, Slippery Rock University	4:00 pm – 5:30 pm SIGMAA on Environmental Mathematics Invited Address A. A. Bartlett, University of Colorado Boulder	
2:00 pm - 6:15 pm	PI MU EPSILON Student Paper Sessions Angela Spalsbury Youngstown State University	5:00 pm – 6:00 pm Graduate Student Reception 6:00 pm - 9:00 pm Tennessee Riverboat Dinner Cruise	
2:15 pm – 5:15 pm	Invited Paper Session <i>Isoperimetric Problems</i> Frank Morgan, Williams College	FRIDAY, AUGUST 11TH	
2:30 pm – 3:50 pm	Panels and Other Sessions <i>Several Perspectives on Quantitative Literacy in the Undergraduate Program</i> Caren Diefenderfer, Hollins University	8:30 am – 9:20 am Invited Address NAM David Blackwell Lecture <i>Public Health and Mathematics: Some Emerging Challenges and Paradigms at the Interface</i> Dominic P. Clemence North Carolina A&T State University	
2:30 pm – 4:30 pm	Contributed Paper Session <i>Mathematics and Sports and Games</i> Howard Penn, U.S. Naval Academy E. Lee May, Salisbury University	9:00 am - 5:00 pm Exhibits and Book Sales 9:00 am - 5:00 pm Student Hospitality Center Richard and Araceli Neal, American Society for the Communication of Mathematics	
2:30 pm – 5:00 pm	MAA Section Officers Meeting	9:30 am – 10:20 am MAA Invited Address Hedrick Lecture Series <i>What is Arithmetic Combinatorics?</i> <i>Lecture 2: Discrete Fourier Analysis: Its Power and Its Limitations</i> W.T. Gowers, Cambridge University	
3:00 pm – 4:30 pm	Graduate Student Poster Session James Freeman, Cornell College	10:30 am – 11:20 am MAA Invited Address James R. Leitzel Lecture <i>Teaching Research: Encouraging Diversity</i> Francis Edward Su, Harvey Mudd College	
3:15 pm – 5:15 pm	Contributed Paper Session <i>Promoting Integrative Learning in Mathematics Through Learning Communities</i> Donna Beers, Simmons College	11:30 am – Noon MAA Prize Session	
3:15 pm – 5:15 pm	Contributed Paper Session <i>Gödel's Contributions to the Foundations of Mathematics – A 100TH</i>		

Program at a Glance

1:00 pm – 1:50 pm	MAA Undergraduate Student Activities Session <i>Weird Multiplication and Weird Ways to Multiply</i> James Tanton, St. Mark's Institute of Mathematics/St. Mark's School	2:00 pm – 5:00 pm	MAA Student Paper Sessions Edward C. Keppelmann, University of Nevada J. Lyn Miller, Slippery Rock University
1:00 pm - 2:20 pm	Panels and Other Sessions <i>Gödel's Contributions to the Foundation of Mathematics</i> Ron Barnes University of Houston-Downtown Linda Becerra University of Houston-Downtown	2:00 pm – 5:00 pm	PI MU EPSILON Student Paper Sessions Angela Spalsbury, Youngstown State University
1:00 pm – 3:00 pm	Contributed Paper Session <i>What Can We Do to Help Our Freshmen See That There is More to Mathematics Than Calculus?</i> Richard J. Maher, Loyola University Chicago	2:30 pm – 3:50 pm	SIGMAA on Statistics Education Panel <i>Enhancing the Teaching of Advanced Placement Statistics</i> Murray H. Siegel South Carolina Governor's School for Science and Mathematics
1:00 pm – 3:00 pm	Contributed Paper Session <i>Fun and Innovative Techniques For an Abstract Algebra Class</i> Sharon M. Clarke, Pepperdine University Andrew Hetzel Tennessee Technological University	2:30 pm – 3:50 pm	Graduate Student Activities <i>Applying for Your First Job</i> David Manderscheid, University of Iowa
1:00 pm – 3:00 pm	Invited Paper Session <i>Gems of Recreational Mathematics</i> Arthur T. Benjamin Harvey Mudd College Ezra A. Brown Virginia Polytechnic Institute and State University	3:00 pm – 4:00 pm	Exhibit Hall Reception Sponsored by Addison Wesley
1:00 pm – 3:00 pm	Minicourse #1: Part 2 <i>Euler</i> William W. Dunham, Muhlenberg College Edward C. Sandifer Western Connecticut State University	3:00 pm – 4:30 pm	MAA Alder Awards Session
1:00 pm – 3:00 pm	Minicourse #2: Part 2 <i>Infusing Connections into Core Courses for Secondary Teachers</i> Steve R. Benson, Education Development Center and University of New Hampshire Karen J. Graham University of New Hampshire	3:15 pm – 5:15 pm	Contributed Paper Session <i>Attracting and Retaining Students to Mathematics Programs Via Outreach</i> Sangeeta Gad, University of Houston-Downtown
1:00 pm – 5:15 pm	General Contributed Paper Session Charles Ashbacher Kirkwood Community College Sarah J. Mabrouk Framingham State College	3:15 pm – 5:15 pm	Invited Paper Session <i>Physical Knots</i> Dorothy Buck, Imperial College London
1:00 pm – 6:00 pm	Invited Paper Session <i>Chaotic Dynamics and Fractal Geometry</i> Mario Martelli Claremont McKenna College	3:15 pm – 5:15 pm	Invited Paper Session <i>Pointing the Way to Proof</i> Diane Herrmann University of Chicago Carol Schumacher, Kenyon College
		3:30 pm – 5:30 pm	Minicourse #5: Part 1 <i>Combinatorially Thinking</i> Arthur T. Benjamin, Harvey Mudd College Jennifer J. Quinn Association for Women in Mathematics
		3:30 pm – 5:30 pm	Minicourse #6: Part 1 <i>Teaching a Proof-Based Course as the Gateway to the Mathematics Major</i> James Sandefur, Georgetown University
		4:45 pm – 6:15 pm	SIGMAA on the Philosophy of Mathematics Invited Address Martin Flashman, Humboldt State University Bonnie Gold, Monmouth University
		5:00 pm – 6:30 pm	SIGMAA on Teaching Advanced High School Mathematics Annual Business Meeting and Reception Dan Teague, North Carolina School of Science and Mathematics

6:00 pm - 8:00 pm	Don Albers: An Appreciation Banquet	1:00 pm – 2:20 pm	SIGMAA on Teaching Advanced High School Mathematics
6:15 pm - 7:45 pm	MAA-PME Student Banquet and Awards Ceremony		Town Hall Meeting <i>What Should Future Math Majors Learn About Proof in High School ?</i> Dan Teague, North Carolina School of Science and Mathematics
8:00 pm – 9:00 pm	Invited Address PME J. Sutherland Frame Lecture <i>Ellipses and Circles? To Understand Voting Problems??!</i> Donald Saari, University of California Irvine	1:00 pm – 2:50 pm	Panels and Other Sessions <i>How to Get Published in MAA Journals</i> Don Albers, MAA Director of Publications
9:00 pm - 11:00 pm	AWM-MAA RECEPTION	1:00 pm – 3:00 pm	Contributed Paper Session <i>Advances in Recreational Mathematics</i> Paul R. Coe, Dominican University William T. Butterworth, DePaul University

SATURDAY, AUGUST 12TH

8:30 am – 9:20 am	Invited Address AWM-MAA Etta Z. Falconer Lecture <i>Cancer Modeling: From the Classical to the Contemporary</i> Trachette Jackson, University of Michigan	1:00 pm – 3:00 pm	Contributed Paper Session <i>The Best Approximation of a Good Numerical Methods Course</i> Kyle Riley, South Dakota School of Mines and Technology
8:30 am – 10:30 am	Contributed Paper Session <i>Mathematics and Popular Culture</i> Sarah J. Greenwald, Appalachian State University Christopher Goff, University of the Pacific	1:00 pm – 3:00 pm	Minicourse #3: Part 2 <i>Contemporary College Algebra: A Refocused College Algebra Course</i> Laurette Foster, Prairie View A&M University Paul Dirks, Miami Dade Community College Don Small, U.S. Military Academy
9:00 am - 2:00 pm	Student Hospitality Center Richard and Araceli Neal, American Society for the Communication of Mathematics	1:00 pm – 3:00 pm	Minicourse #4: Part 2 <i>Fair Division: From Cake-Cutting to Dispute Resolution</i> Steven J. Brams, New York University
9:00 am - 2:00 pm	Exhibits and Book Sales		
9:30 am – 10:20 am	MAA Invited Address Hedrick Lecture Series <i>What is Arithmetic Combinatorics?</i> <i>Lecture 3: Freiman's Theorem and Arithmetic Progressions of Length 4</i> W.T. Gowers, Cambridge University	1:00 pm – 3:00 pm	Invited Paper Session <i>Stories From the History of Mathematics as a Tool for Teaching</i> David Bressoud, Macalester College
10:30 am – 11:20 am	MAA Invited Address <i>Stories From the History of Mathematics</i> David Bressoud, Macalester College	1:00 pm – 4:00 pm	Panels and Other Sessions <i>WEBWORK, A Web Based Interactive Homework System</i> Michael E. Gage, University of Rochester Arnold K. Pizer, University of Rochester Vicki Roth, University of Rochester
11:30 am - Noon	MAA Business Meeting This session will be moderated by Martha J. Siegel, Towson University, MAA Secretary.	1:00 pm – 5:15 pm	General Contributed Paper Session Charles Ashbacher, Kirkwood Community College Sarah J. Mabrouk, Framingham State College
1:00 pm – 2:15 pm	Student Problem Solving Competition Richard Neal, American Society for the Communication of Mathematics	2:30 pm – 3:00 pm	Student Activities <i>Math Horizons</i> Special Session Arthur T. Benjamin, Harvey Mudd College Jennifer Quinn Association for Women in Mathematics
1:00 pm – 2:20 pm	Panels and Other Sessions <i>Graduation is Coming: Now What?</i> Sarah Ann Stewart, Belmont University Joshua Laison, Colorado College	2:30 pm – 3:50 pm	Panels and Other Sessions <i>Organizing MAA Sessions</i> Douglas Ensley, Shippensburg University

Program at a Glance

3:00 pm – 4:20 pm	Panels and Other Sessions <i>Supporting Beginning Mathematics Teacher Educators: What and How</i> Gail Burrill, Michigan State University	3:15 pm – 5:15 pm	Invited Paper Session <i>Graph Theory Ideas for Undergraduate Research</i> Aparna Higgins, University of Dayton
3:00 pm – 5:00 pm	SIGMAA on Teaching Advanced High School Mathematics Workshop <i>Teaching Continuity and Differentiability for Functions of One and Two Variables</i> Dan Teague, North Carolina School of Science and Mathematics Stephen Davis, Davidson College	3:15 pm – 5:15 pm	SIGMAA on Research in Mathematics Education Contributed Paper Session <i>Research into Practice: The Teaching and Learning of Undergraduate Mathematics</i> William Martin, North Dakota State University Chris Rasmussen, San Diego State University Michael Oehrtman, Arizona State University
3:15 pm - 4:30 pm	MAA Mathematical Contest in Modeling (MCM) Winners Ben Fusaro, Florida State University	3:30 pm – 5:30 pm	Minicourse #5: Part 2 <i>Combinatorially Thinking</i> Arthur T. Benjamin, Harvey Mudd College Jennifer J. Quinn Association for Women in Mathematics
3:15 pm – 5:15 pm	Contributed Paper Session <i>Research into Practice: The Teaching and Learning of Undergraduate Mathematics</i> William Martin, North Dakota State University Chris Rasmussen, San Diego State University Michael Oehrtman, Arizona State University	3:30 pm – 5:30 pm	Minicourse #6: Part 2 <i>Teaching a Proof-Based Course as the Gateway to the Mathematics Major</i> James Sandefur, Georgetown University
3:15 pm – 5:15 pm	Contributed Paper Session <i>Mathematical Modeling, Projects, and Demonstrations That Enhance a Differential Equations Course</i> William P. Fox, Francis Marion University	6:00 pm - 9:00 pm	MAA Silver and Gold Banquet

SUNDAY, AUGUST 13TH

9:00 am - 4:00 pm **Tour of Cades Cove/Smoky Mountains**

Tour of Cades Cove Smoky Mountains

SUNDAY, AUGUST 13TH
9:00 AM – 4:00 PM

PRICE PER PERSON: \$49

The 11-mile Cades Cove loop features magnificent vistas of the Smoky Mountains. Following the grades and turns of the old wagon roads, and fording a stream now and then, you will explore homesteads, churches and graveyards of early pioneers in the 1800s who settled this land. Along the way you are likely to see wildlife such as deer and wild turkey that inhabit the cove year-round.

Approximately mid-way through the tour there will be a scheduled stop for lunch at the Cable Mill and Farmhouse. Space is limited so register early.

Student Program at a Glance

WEDNESDAY, AUGUST 9TH

- 4:30 pm – 5:30 pm **MAA/PI MU EPSILON Student Reception**
- 5:30 pm – 7:15 pm **Math Jeopardy**
John Harris, Furman University

THURSDAY, AUGUST 10TH

- 9:00 am - 5:00 pm **Student Hospitality Center**
Richard and Araceli Neal, American Society for the Communication of Mathematics
- 1:00 pm – 1:50 pm **MAA Student Lecture**
Math at Top Speed: Exploring and Breaking Myths in Drag Racing Folklore
Richard Tapia, Rice University
- 2:00 pm - 6:15 pm **MAA Student Paper Sessions**
Edward C. Keppelmann, University of Nevada
J. Lyn Miller, Slippery Rock University
- 2:00 pm - 6:15 pm **PI MU EPSILON Student Paper Sessions**
Angela Spalsbury, Youngstown State University
- 3:00 pm – 4:30 pm **Graduate Student Poster Session**
James Freeman, Cornell College
- 5:00 pm – 6:00 pm **Graduate Student Reception**

Friday, August 11th

- 9:00 am - 5:00 pm **Student Hospitality Center**
Richard and Araceli Neal, American Society for the Communication of Mathematics
- 1:00 pm – 1:50 pm **MAA Undergraduate Student Activities**
Weird Multiplication and Weird Ways to Multiply
James Tanton, St. Mark's Institute of Mathematics/St. Mark's School
- 2:00 pm – 5:00 pm **MAA Student Paper Sessions**
Edward C. Keppelmann, University of Nevada
J. Lyn Miller, Slippery Rock University
- 2:00 pm – 5:00 pm **PI MU EPSILON Student Paper Sessions**
Angela Spalsbury, Youngstown State University
- 2:30 pm – 3:50 pm **Graduate Student Activities**
Applying for Your First Job
David Manderscheid, University of Iowa
- 6:15 pm - 7:45 pm **PME-MAA Student Banquet and Awards Ceremony**

SATURDAY, AUGUST 12TH

- 9:00 am - 2:00 pm **Student Hospitality Center**
Richard and Araceli Neal, American Society for the Communication of Mathematics
- 1:00 pm – 2:15 pm **Student Problem Solving Competition**
Richard Neal, American Society for the Communication of Mathematics
- 1:00 pm – 2:20 pm **Panels and Other Sessions**
Graduation is Coming: Now What?
Sarah Ann Stewart, Belmont University
Joshua Laison, Colorado College
- 2:30 pm – 3:00 pm **Undergraduate Student Activities**
Math Horizons Special Session
Arthur T. Benjamin, Harvey Mudd College
Jennifer Quinn, Association for Women in Mathematics
- 3:15 pm - 4:30 pm **MAA Mathematical Contest in Modeling (MCM) Winners**
Ben Fusaro, Florida State University

CALL FOR UNDERGRADUATE STUDENT PAPERS

Students who wish to present a paper at MathFest 2006 in Knoxville, Tennessee 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. The 2006 MathFest Student Speaker Registration is now available online at <http://www.maa.org/students/undergrad/>.

Nomination forms for the MAA Student Paper Sessions are located on MAA Online at <http://www.maa.org> under STUDENTS, or can be obtained from Dr. Edward Keppelmann keppelma@unr.edu.

Students who make presentations at 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 23, 2006.

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.pme-math.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 23, 2006.

PREP

Professional Enhancement
Programs of the MAA

2006

Looking for a great way to join with your peers this summer to explore new ideas? The MAA Professional Enhancement Program (PREP) offers workshops on a variety of topics. Whether you are interested in looking for more effective approaches to geometry courses or learning about new topics such as mathematical biology, the PREP program has something for you. Cost of lodging and food while at the workshops is included in the registration fee.

CONICS: SEARCHING FOR BEAUTY REVEALS DEEPER TRUTHS

Keith Kendig
May 15-19, 2006
Cleveland State University
Cleveland, Ohio

Registration Fee:
\$250 by April 4, 2006, \$325 after April 4, 2006

MAKING THE MATH VISIBLE: EXPLORATIONS IN COLLEGE GEOMETRY USING THE GEOMETER'S SKETCHPAD

Bill Fenton, Sr. Barbara Reynolds
June 4-11, 2006
Bellarmine University
Louisville, KY

Co-sponsored by Key College Publishing

Registration Fee:
\$250 by April 25, 2006, \$325 after April 25, 2006

WALL STREET NEEDS ROCKET SCIENTISTS: MATHEMATICS TO THE RESCUE

Thomas Struppeck, Don Miller
June 6-10, 2006
Saint Mary's College
South Bend, IN

Registration Fee:
\$250 by April 25, 2006, \$325 after April 25, 2006

WAVELETS AND APPLICATIONS: A MULTIDISCIPLINARY UNDERGRADUATE COURSE WITH AN EMPHASIS ON SCIENTIFIC COMPUTING

Patrick Van Fleet
June 7-10, 2006
University of St. Thomas
St. Paul, MN

With support from NSF Grant DUE-0442684

Registration Fee:
\$250 by April 25, 2006, \$325 after April 25, 2006

DEVELOPING INTERNAL DEPARTMENTAL SELF-STUDIES FOR MATHEMATICAL SCIENCES DEPARTMENTS

Nancy Baxter-Hastings
June 11-14, 2006
Dickinson College, Carlisle, PA

Registration Fee: \$750 per team

DISCRETE MATHEMATICS: PUZZLES, PATTERNS, AND PROOF

Doug Ensley, James Hamblin, David Hastings,
Kate McGivney
June 12-16, 2006
Shippensburg University
Shippensburg, PA

Registration Fee:
\$250 by May 2, 2006, \$325 after May 2, 2006

MATHEMATICS OF MARKOV CHAIN MONTE CARLO

David A. Levin, Yuval Peres, Elizabeth Wilmer
June 12-16, 2006
Mathematical Sciences Research Institute
Berkeley, CA

Co-sponsored by Mathematical Sciences
Research Institute

Registration Fee:
\$250 by May 2, 2006, \$325 after May 2, 2006

COMPUTATIONAL AND MATHEMATICAL BIOLOGY

Eric Marland, Raina Robeva, Robin Davies
June 18-23, 2006
Sweet Briar College
Sweet Briar, VA

Offered in conjunction with the National
Computational Science Institute workshop
on Computational Biology for Biology
Educators <http://www.computation-alscience.org>

Registration Fee:
\$250 by May 9, 2006, \$325 after May 9, 2006

REVITALIZING YOUR DEVELOPMENTAL MATHEMATICS COURSES: A CONTEXT-DRIVEN, ACTIVITY-BASED APPROACH

Gary Simundza, Nancy Crisler
June 18-23, 2006
Foothill Conference Center
Berkeley, CA

Co-sponsored by Key College Publishing

Registration Fee:
\$250 by May 9, 2006, \$325 after May 9, 2006

INCORPORATING THE SOFTWARE GAP INTO TEACHING ABSTRACT ALGEBRA

Russell Blyth, Julianne Rainbolt
July 10-14, 2006
Online, from Saint Louis University
Saint Louis, MO

Registration Fee:
\$100 by May 30, 2006, \$175 after May 30, 2006

EXPLORING MULTIVARIABLE CALCULUS USING MAPLE

Russell Blyth, Michael K. May
July 24-28, 2006
Online from Saint Louis University
Saint Louis, MO

Registration Fee:
\$100 by June 13, 2006, \$175 after June 13, 2006

LEADING THE ACADEMIC DEPARTMENT: A WORKSHOP FOR CHAIRS OF MATHEMATICAL SCIENCES DEPARTMENTS

Arnie Ostebee, Jon Scott
Oct. 12-15, 2006
Mathematical Association of America
Washington, DC

Registration Fee:
\$500 by September 12, 2006
(does not include lodging)

PREP registration information available at www.maa.org/PREP

PROFESSIONAL ENHANCEMENT PROGRAMS

Helping you respond to new developments in undergraduate mathematics.



A PMET workshop is an opportunity to explore ways of improving the mathematical background and pedagogical practice of future teachers.

The PMET Workshop Program will have a total of six workshops in 2006 – four new workshops and two continuing workshops. PMET will offer the following new workshops in 2006:

PMET WORKSHOPS FOR PREPARING ELEMENTARY SCHOOL TEACHERS:

May 22-26

El Paso Community College, El Paso, TX
Directors: Joan Evans & Bernard Madison
Participants to be invited from the El Paso area. Some spots possibly available for faculty outside the El Paso area.

June 5-9

California State University, Fresno, CA
Directors: Dale Oliver & Phyllis Chin
Commuting workshop for faculty in Fresno area. Some spots possibly available for faculty outside Fresno area.

PMET WORKSHOP FOR PREPARING MIDDLE SCHOOL TEACHERS:

June 25-30

University of Nebraska-Lincoln, Lincoln, NE
Directors: Ruth Heaton, Jim Lewis & Cheryl Olsen
Held in conjunction with the Math in the Middle Summer Institute (a Math Science Partnership Institute funded by NSF), participants will get ample opportunity to interact with teachers who are attending the Institute.

PMET WORKSHOP FOR PREPARING ELEMENTARY AND MIDDLE SCHOOL TEACHERS:

May 29-June 2

Coppin State University, Baltimore, MD
Directors: Genevieve Knight & Joan Goodman
Special Focus: Education of African-American Students

The following two workshops will be the second summer continuations of programs begun in 2005 with existing participants. Some spots may be available for additional participants.

PMET WORKSHOPS FOR PREPARING SECONDARY SCHOOL TEACHERS:

May 29-June 2

University of Alabama, Tuscaloosa, AL
Directors: Holly Hirst & Cecelia Laurie
Special Focus: The Mathematics of High School

July 30-Aug 5

Texas Southern University, Houston, TX
Directors: Joan Evans & Kathy Ivey
Special Focus: Multiple Representations
This workshop is open to any participant of a previous PMET workshop for preparing secondary school teachers.

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

Some travel support is available to deal with special circumstances. For information, contact Bernie Madison at bmadison@uark.edu

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

Questions regarding the PMET workshops may be addressed to Bernie Madison at bmadison@uark.edu



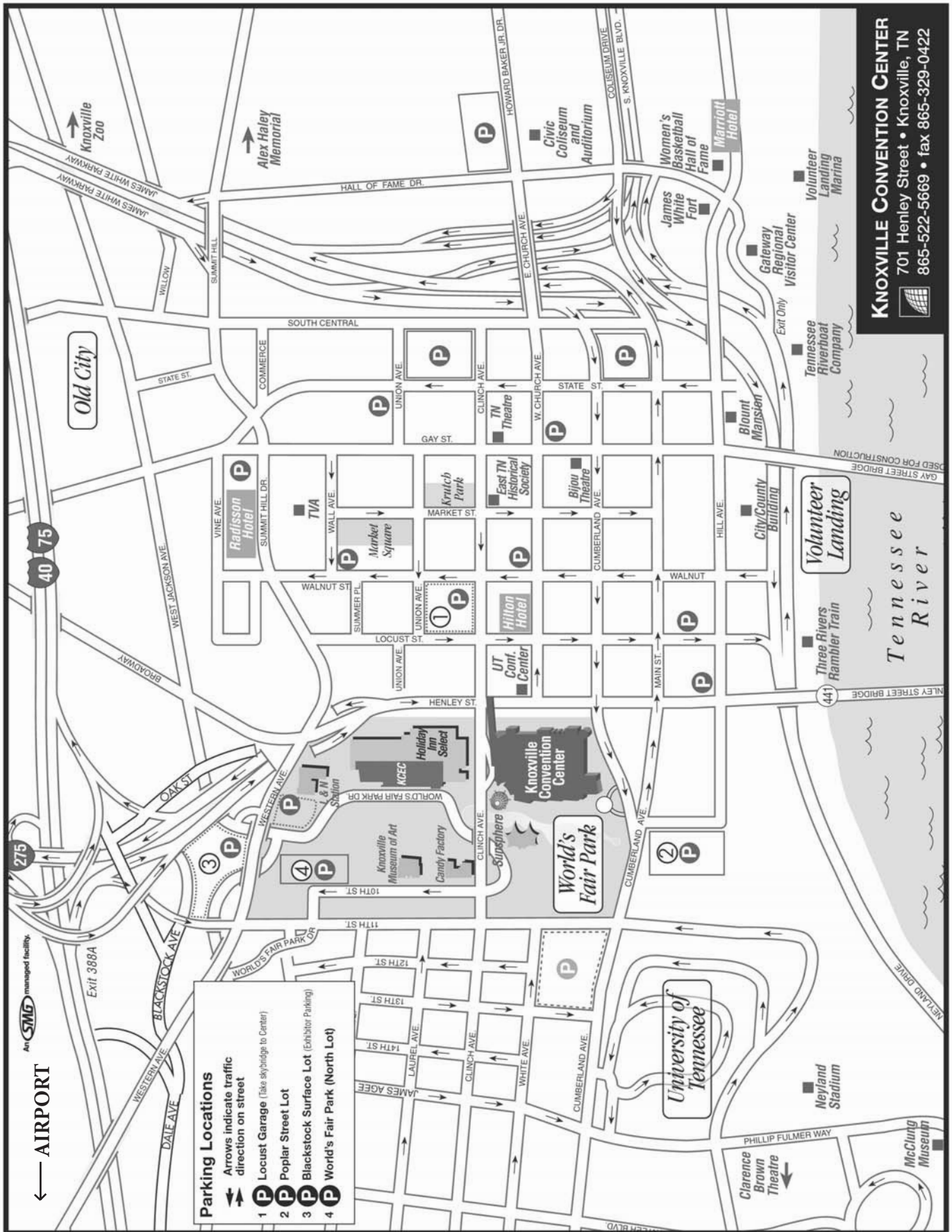
Major funding provided by the **National Science Foundation**

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) www.maa.org/PREP

Deadline to register for all Workshops: April 1, 2006.

PMET application information available at www.maa.org/PMET



Registration Form

MATHFEST 2006 · AUGUST 10-12 · KNOXVILLE CONVENTION CENTER

MathFest 2006 · Knoxville, TN · 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 23, 2006**
If your form is received by this date, badge and program can be mailed.

MathFest, Short Course, Minicourse, Banquets & Events: **July 28, 2006**

Hotel Reservations, Changes & Cancellations: **July 10, 2006**

Refund 50%:
MathFest, Short Course & Minicourses: **August 4, 2006**

This is my primary mailing address for all MAA Membership Items? Yes No

Please provide MAA Member number, if applicable: _____

I am a first time attendee? Yes No

I do not want my program mailed to me on July 7, 2006. 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

Payment Information

MathFest	by 6/23	after 6/23
Member <input type="checkbox"/> MAA <input type="checkbox"/> AMS	\$200	\$257
Nonmember	\$288	\$367
Graduate Student	\$42	\$52
Undergrad Student	\$26	\$31
Unemployed	\$42	\$52
Individual from a		
Developing Country	\$42	\$52
K-12 Teacher	\$42	\$52
Emeritus Member	\$42	\$52
One-day		
<input type="checkbox"/> Thu <input type="checkbox"/> Fri <input type="checkbox"/> Sat	\$104	\$104
High School Student	\$10	\$10
Guest	\$15	\$15
Subtotal for MathFest	\$ _____	

Minicourses	by 6/23	after 6/23
(see page 15 for course details)		
#1 Euler	\$60	\$70
#2 Infusing Connections Into Core Courses for Secondary Teachers	\$60	\$70
#3 Contemporary College Algebra	\$60	\$70
#4 Fair Division: From Cake Cutting to Dispute Resolution	\$60	\$70
#5 Combinatorially Thinking	\$60	\$70
#6 Teaching a Proof-Based Course as the Gateway to the Mathematics Major	\$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
Great Smoky (8/9)	_____	\$45	\$ _____
Mountains Arts & Crafts Community Tour			
Opening Banquet (8/9)	_____	\$35	\$ _____
TN Riverboat (8/10) Dinner Cruise	_____	\$45	\$ _____
Don Albers: (8/11) An Appreciation	_____	\$35	\$ _____
PME Student Banquet (8/11)			
Undergrad students & Student paper presenters	_____	\$20	\$ _____
All Others	_____	\$25	\$ _____

Chicken Salmon Vegetarian
 Silver & Gold Banquet (8/12) _____ \$42 \$ _____
 Beef Vegetarian
 Tour of Cades (8/13) _____ \$49 \$ _____
 Cove/Smoky Mountains
Subtotal for Social Events: \$ _____

Student Events
 Graduate Student Reception (8/10) Yes No
 Student Activity Session Yes No
Short Course (8/8-8/9) by 6/23 after 6/23
Environmental Modeling
 MAA or AMS Member and MathFest Participant \$145 \$195
 Nonmember or MathFest Non-participant \$195 \$240
 Student \$70 \$90
 MathFest Registration is not required for the Short Course. Contact MAA for more information.
Subtotal for Short Course: \$ _____

Registration/Ticket Fees
 \$ _____

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.

Questions/Changes/Special Needs:
 Call 1.800.741.9415 ext. 430
 broemen@maa.org

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

NEW YORK

Jamestown Community College

Full-time, Tenure-Track Faculty Position
JCC is a comprehensive community college with degree granting campuses in Jamestown and Olean in southwestern New York State. We are a technologically progressive, open access institution that meets regional education needs by providing transfer degree programs, career programs, community service, developmental education, and training for business and industry. This position is entry level and will be filled at the instructor or assistant professor level. Position will begin August 2006.

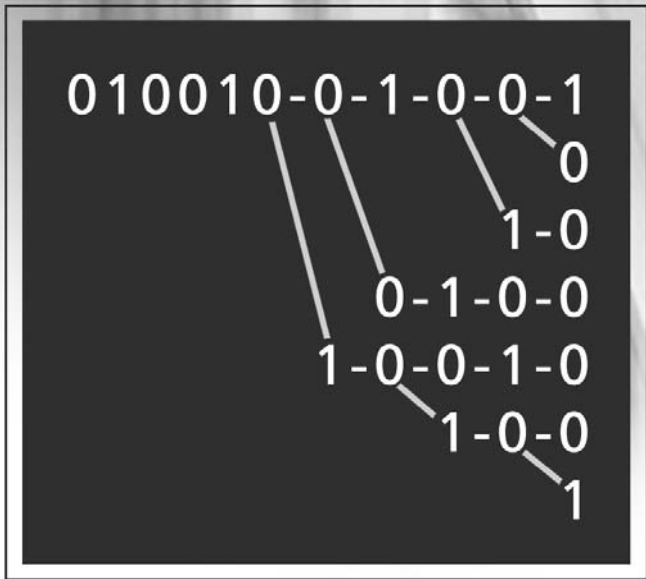
MATHEMATICS - Cattaraugus County Campus

Responsibilities include teaching a full range of developmental and college-level mathematics courses. A master's degree in mathematics or related field with at least fifteen graduate hours in mathematics and demonstrated leadership ability are required. Previous college teaching experience is preferred.

Please send resume, college transcripts, and three professional references with addresses and telephone numbers to Jamestown Community College, Human Resources Office, P.O. Box 20, Jamestown, NY 14702-0020. Review of applications will begin immediately and continue until position is filled. Visit our website at www.sunyjcc.edu <http://www.sunyjcc.edu/> for complete information about JCC and all other open positions.

JCC is firmly and fully committed to the principles of Affirmative Action and Equal Opportunity and will extend itself to see that these policies are fulfilled.


NSANATIONAL SECURITY AGENCY



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When you join NSA, you join a highly talented group of Mathematicians who deduce structure where it is not apparent, find patterns in seemingly random sets, and create order out of chaos. They apply Number Theory, Group Theory, Finite Field Theory, Linear Algebra, Probability Theory, Mathematical Statistics, Combinatorics, and more to a world of challenges. They exchange ideas and work with some of the finest minds and most powerful computers in the country. And you can too, when you put your math intelligence to work at NSA.

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U.S. citizenship is required. NSA is an equal opportunity employer. All applicants for employment are considered without regard to race, color, religion, sex, national origin, age, marital status, handicap, sexual orientation, or status as a parent.

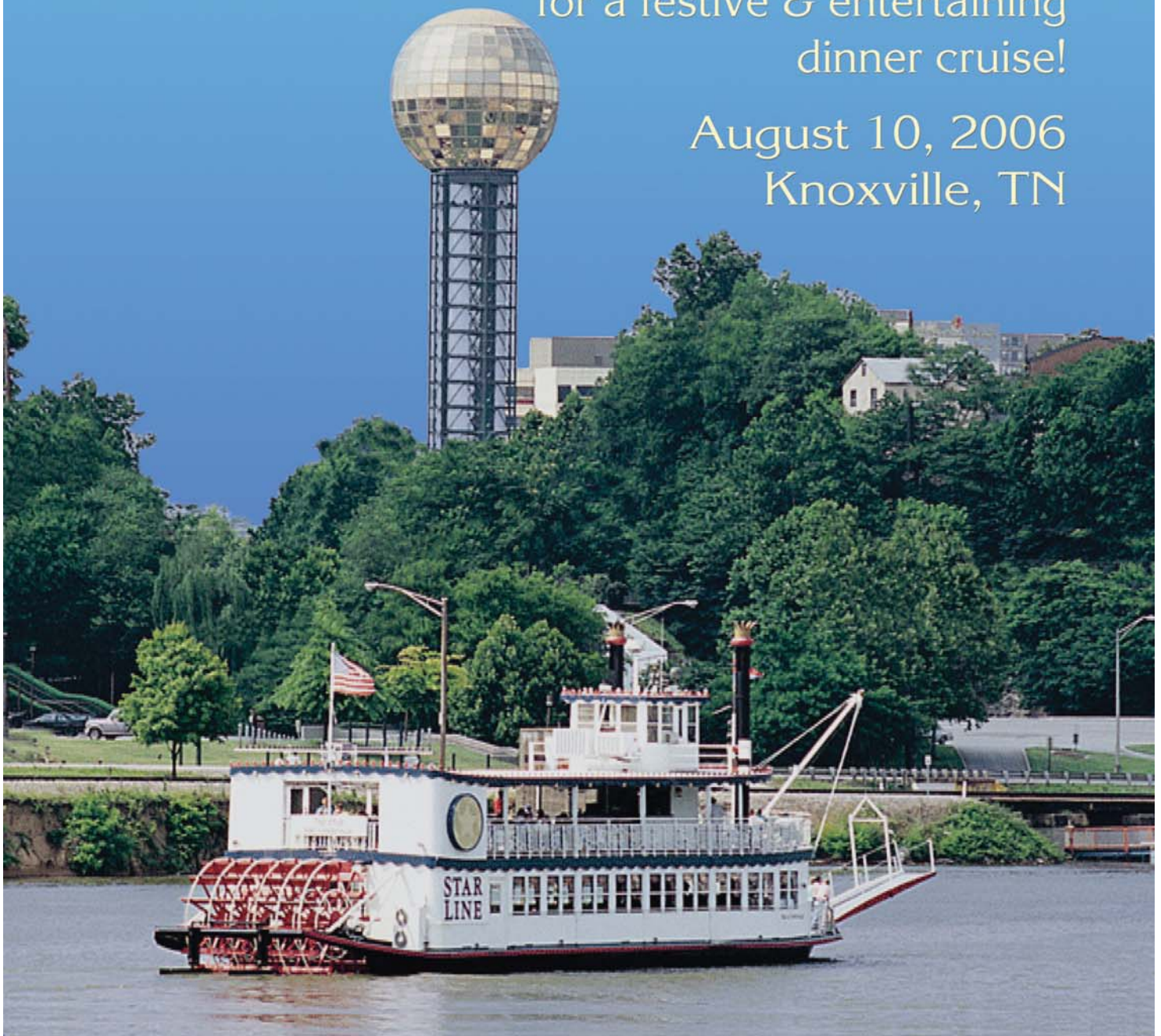


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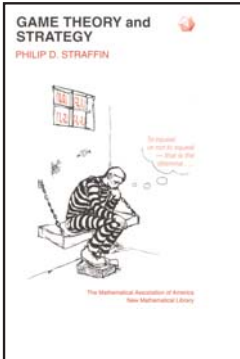
August 10, 2006
Knoxville, TN



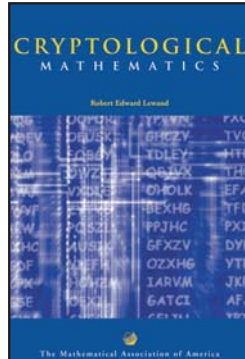
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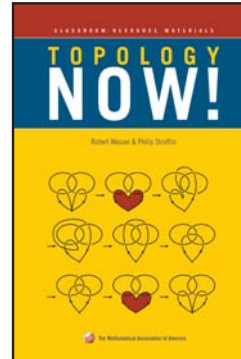
Game Theory



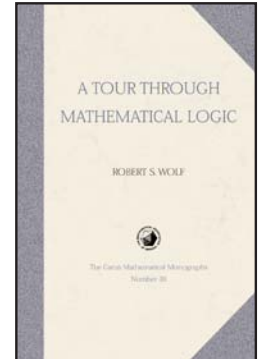
Cryptanalysis/
Combinatorics



Transition to
Advanced
Mathematics



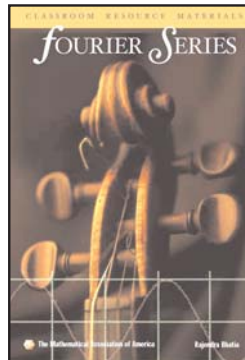
Topology



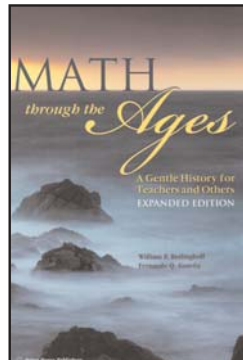
Logic



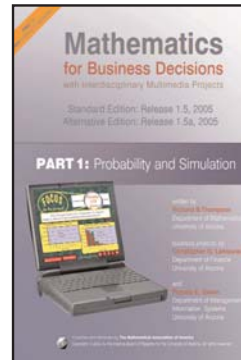
Statistics



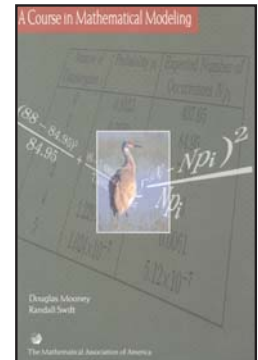
Analysis



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