

FOCUS

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Invited Addresses	3-4
Invited Paper Sessions	5
Contributed Paper Sessions	6-7
Panels and Other Sessions	8-9
Graduate Student Sessions	10-11
Student Activities	12-13
Minicourses	15
Extended Programs	16
Exhibits	17
Project NExT	18
Social Events	19
General Information	22-25
Program at a Glance	29-32
Student Program at a Glance	33
Maps	34-35
Employment Opportunities	36
Registration Form	37-38

On the cover: Providence, Rhode Island. All photographs of Providence are courtesy of <http://www.goprovidence.com>.

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

MAA INVITED ADDRESS

PEBBLING RESULTS BY UNDERGRADUATE RESEARCHERS

Aparna Higgins
University of Dayton
Thursday, August 12
8:30 am - 9:20 am



Consider a connected graph with pebbles distributed on its vertices. A pebbling move on such a graph consists of removing two pebbles from any one vertex, discarding one of those pebbles and moving the other pebble to an adjacent vertex. The pebbling number of a graph is defined as the least number of pebbles, m , such that, for any distribution of m pebbles, one pebble can be moved to any designated vertex using a sequence of pebbling moves. In the fifteen years since the pebbling number of a graph was defined, undergraduates around the country have contributed significantly to the body of results on pebbling. Their results have been published in research journals and have been presented (with contagious excitement!) in contributed talks and in poster sessions. This talk will focus on some undergraduate pebblers and their results.

MAA-NAM DAVID BLACKWELL LECTURE



Mathematical Predictions and Aneurysm Treatment
Dawn Alisha Lott
Delaware State University
Friday, August 13
8:30 am - 9:20 am

Effective modeling of flow for cerebral aneurysms and their parent arteries depend on the input flow, the size of the parent vessel and aneurysm and other numerous factors. Two-dimensional models seem to lack the necessary power to reproduce accurate flow events within in vivo aneurysms. In addition, little is written describing the role of the neck and proximal dome configuration in establishing areas of shear stress as a potential for aneurysm growth. Using finite volume analysis, we develop two- and three-dimensional saccular aneurysm models and assess flow characteristics as compared to a recently published in vitro three-dimensional model. Different neck and dome configurations with regards to shear stress, velocity and pressure are compared. Emphasis is on optimal methods of treatment predicted by mathematical analysis.

HEDRICK LECTURE SERIES

RAMANUJAN GRAPHS
Peter Sarnak, Princeton University



LECTURE 1: EXPANDER GRAPHS

Thursday, August 12
9:30 am - 10:20 am

Expander Graphs are highly connected but very sparse graphs. They have many applications, in pure mathematics and, perhaps less surprisingly, in applied mathematics and computer science. We will discuss some of these applications, the construction of expanders as well as Ramanujan Graphs which are special expanders which are in a certain respect optimal.

LECTURE 2: RAMANUJAN'S CONJECTURE

Friday, August 13
9:30 am - 10:20 am

We review and explain the original Ramanujan Conjecture in the theory of modular forms and its connection to Part I and some applications in number theory.

LECTURE 3: RAMANUJAN'S CONJECTURE (CONTINUED)

Saturday, August 14
9:30 am - 10:20 am

We describe some generalizations of the Ramanujan Conjectures and their place in the modern theory of automorphic forms.

MAA INVITED ADDRESS

THE MYSTERY OF THE MISSING TANGENTS

Steven Sigur, The Paideia School, Atlanta
Thursday, August 12
10:30 am - 11:20 am

There has been renewed interest in triangle geometry. We will present unfamiliar ways to think about triangle geometry beginning with the familiar circumstance of a triangle with its tritangent circles. The talk will end with the way cubic curves organize points and lines in the plane of the triangle.

JAMES R.C. LEITZEL LECTURE

MATHEMATICS AND THE SCHOOLS

Alan Schoenfeld

University of California at Berkeley

Friday, August 13

10:30 am - 11:20 am



Mathematicians have only a few degrees of separation from the schools. Some of us work in classrooms; some engage in professional development; almost all of us teach mathematics to people who will work in schools. We have our own view of the rich, connected character of mathematics, and we have hopes and expectations that students will experience mathematics in ways that reflect richness. I've spent the past few years in middle schools, working with kids and teachers. There is work to be done! I'll talk about some of what I've seen and about some things we can do to help.

PI MU EPSILON J. SUTHERLAND FRAME LECTURE



WHEN FIVE COLORS SUFFICE

Joan P. Hutchinson

Macalaster College

Friday, August 13, 8:00 pm - 9:00 pm

The challenging four-color conjecture, posed in 1852, asks whether four colors are enough to color the regions of any map so that two regions that share a boundary receive different colors. In 1976 K. Appel and W. Haken

proved that "four colors suffice." With some changes to the problem, four colors may no longer be enough. We discuss these variations in which five, not four, colors suffice.

MAA STUDENT LECTURE

THE SECRET OF BRUNELLESCHI'S CUPOLA

Mario Martelli

Claremont-McKenna College

Saturday, August 14

3:00 pm - 3:50 pm



How did he do it? In 1420 the architect Filippo Brunelleschi won the competition for building the "octagonal cupola" of Florence's cathedral. His innovative design did not use centering. Brunelleschi built a model to show that his proposal would work, but he categorically refused to reveal his secret. The mystery remains today, but a recent mathematical analysis has been able to lift the veil from parts of Brunelleschi's design. How? Come to the talk to find out.

AWM-MAA LECTURE

MATHEMATICS EDUCATION OF TOMORROW

Bozenna Pasik-Duncan

University of Kansas

Saturday, August 14

8:30 am - 9:20 am



The presentation will focus on integrating research, teaching, and learning. The importance of vertical and horizontal teaching and research will be shown. The classroom will be described as a stochastic adaptive control system in which scientific methods are used as teaching methods. It will be shown that collaborative effort is needed for reaching success in research, teaching, and learning, and that enthusiasm and passion are needed to show that math with its cross-boundaries nature can take students everywhere, not only to math or engineering but also to biomedicine, finance, telecommunications, science, movie production, and philosophy of science or art. The broad and inspiring vision of mathematics as a discipline and a profession, as well as a strong commitment to carry out the role of a professional mathematician in a wide variety of communities and settings will play an important part in mathematics education. The issues of how to teach to profess and what it means to learn to profess will be addressed.

MAA INVITED ADDRESS

HOW COMPUTER GRAPHICS IS CHANGING HOLLYWOOD

Tony DeRose

Pixar Animation Studios

Saturday, August 14

10:30 am - 11:20 am



Film making is undergoing a digital revolution brought on by advances in areas such as computer technology, computational physics, and computer graphics. This talk will provide a behind the scenes look at how fully digital films —such as Pixar's "Monster's Inc" and "Finding Nemo"—are made, with particular emphasis on the role that geometry plays in the revolution.

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

INVITED PAPER SESSION ON COMBINATORICS

Doug Ensley and Cheryl Olson, Shippensburg University

Thursday, August 12, 1:00 pm - 3:00 pm

The session will include the following talks: Jennifer Quinn, Occidental College, “The Politics of Exclusion: Doing Away with the Principle of Inclusion-Exclusion”; Arthur Benjamin, Harvey Mudd College, “Counting on Determinants (Part I)”; Naomi Cameron, Occidental College, “Counting on Determinants (Part II)”; Zsuzsanna Szaniszlo, Valparaiso University, “An Overview of Recent Results on Pebbling.”

INVITED PAPER SESSION ON GEOMETRIC GROUP THEORY

Philip Hotchkiss, Westfield State College

John Meier, Lafayette College

Thursday, August 12, 3:15 pm - 5:15 pm

Jennifer Taback, Bowdoin College, will speak on “Dead end words and other anomalies.” Other speakers include Ted Turner, University of Albany, and Ken Brown, Cornell University.

INVITED PAPER SESSION ON APPLICATIONS OF TOPOLOGY

Colin Adams, Williams College

Friday, August 13, 2:30 pm - 4:30 pm

The session will include the following talks: Robert Franzosa, University of Maine, “Applications of Topology to Geographical Information Systems”; Greg Buck, St. Anselm College, “Rope Length of Knots”; Robert Ghrist, University of Illinois Champaign-Urbana, “Topology of Robotics”; and De Witt Sumners, Florida State University, “Knots in DNA.”

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 4, 2004.

MAA CP A1 USES OF THE WWW THAT ENRICH AND PROMOTE LEARNING

Roger Nelson, Ball State University
Marcelle Bessman, Jacksonville University
Kirby Baker, UCLA

Thursday, August 12, 1:00 pm - 3:00 pm

Friday, August 13, 1:00 pm - 3:00 pm

This session seeks to highlight uses of the Web and its tools that engage students in the learning process. Tools such as course management systems, digital resources, tutorial systems, and hybrids that combine these functions on the Web can make a difference in student engagement, understanding, and performance. Talks should demonstrate how these technologies are being integrated into the learning process. The session is sponsored by WebSIGMAA and the MAA Committee on Computers in Mathematics Education (CCIME).

MAA CP B1 EXTRACURRICULAR MATHEMATICS

Jeff Johannes, SUNY Geneseo
Melissa Sutherland, SUNY Geneseo

Thursday, August 12, 1:00 pm - 3:00 pm

Most MAA sessions are focused on different ideas and strategies to incorporate into various classes. On the other hand, some of the most creative and diverse aspects of our work with students are the ways in which we incorporate mathematics outside the classroom. This session invites presentations of mathematical activities outside of the classroom. This includes, but is not limited to, MAA student chapter activities, field trips, activities with schools and in the general community, presentations, and workshops. Submissions are encouraged not only from faculty but also from students who have organized extracurricular mathematical activities.

MAA CP C1 PUTTING SOME ANALYSIS INTO INTRODUCTORY REAL ANALYSIS

Richard J. Maher, Loyola University Chicago
Thursday, August 12, 3:15 pm - 5:15 pm

Introductory Real Analysis is a required course for most mathematics majors. As such, it offers unique opportunities to generate real student interest in advanced mathematics by challenging their intuition and pushing them to think at a higher level. All too often this goal is not reached and the course ends up as one that presents the theory behind the results in first year calculus—essentially a course in epsilons and deltas. Papers submitted for this session should present approaches that generate student interest and encourage them to explore mathematics further while at the same time focusing on the key theoretical components underlying first year calculus.

MAA CP D1 COOPERATIVE PROJECTS BETWEEN THE MATHEMATICAL SCIENCES AND THE LIFE SCIENCES

Catherine M. Murphy, Purdue University Calumet
Bill Marion, Valparaiso University
Saturday, August 14, 3:15 pm - 5:15 pm

Emerging areas in the life sciences are opening up new careers for biology and mathematical sciences majors. Both groups of students need preparatory undergraduate experiences. This session will consist of talks by faculty who, within the existing structures of their departments and schools, have developed such experiences with colleagues in the life sciences. The presentations will describe the type of experience, how it was initiated, how it has evolved and, most importantly, evidence of its impact on students. This session is sponsored by the Subcommittee on Mathematics Across the Curriculum.

MAA CP E1 INNOVATIVE APPROACHES IN MATHEMATICS EDUCATION

Carol Vorbach, University of Houston-Downtown
Thursday, August 12, 3:15 pm - 5:15 pm

This session invites papers dealing with innovations in mathematics education courses for both pre-service and in-service teachers K-12. Topics of interest might include: new courses; use of technology or web-based modules; online tools and activities; courses aligned to national or state standards; courses for master's of arts in teaching programs; relevant assessment techniques; interactions with local school districts; usefulness of such topics as history of mathematics or collaborative learning strategies; difficulties encountered in teaching math ed courses. We look forward to interesting responses and hope that discussion will enhance our future teaching.

MAA CP F1 ADVANCES IN RECREATIONAL MATHEMATICS

Charles Ashbacher, Charles Ashbacher Technologies
Friday, August 13, 3:15 pm - 5:15 pm

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

MAA CP G1 MODEL LESSONS FROM FIRST-YEAR CALCULUS

Donna Beers, Simmons College
Friday, August 13, 1:00 pm - 3:00 pm

This session will explore best practices in teaching first-year calculus. In their book, *The Teaching Gap: Best Ideas from the World's Teachers for Improving Education in the Classroom*, education researchers James W. Stigler and James Hiebert point to “lesson-study” as the driving force behind educational reform in Japan. Lesson-study is a “research-and-development system” in which teachers collaborate to design, implement, and refine mathematics lessons. The premise is that continual teaching improvement results from understanding how the daily lesson promotes student understanding and learning. This session invites presenters to contribute to the scholarship of teaching by sharing a lesson given in the last three years on a single topic from first-year calculus. Presenters should describe their student profile and address these questions: What is the topic of your lesson? What is (are) the main idea(s) behind the topic? How do you present the topic? How do students learn the topic? What are the student mistakes and confusions in learning this topic? Where do the teaching difficulties lie? How did your lesson evolve over time? How did you measure the success of this lesson in promoting student learning?

MAA GP H1 MATHEMATICAL MODELING MODULES AND MATERIALS

Kyle L. Riley, South Dakota School of Mines and Technology
Laurie J. Heyer, Davidson College
Saturday, August 14, 1:00 pm - 3:00 pm

Courses in mathematical modeling have grown in popularity in recent years, encompassing a diverse range of offerings. The interdisciplinary nature of modeling courses allows for the creative use of a wide range of materials ranging from writing and reading in the curriculum to innovative uses of technology. Modules, self-contained instructional lessons, have been popularized by the Consortium for Mathematics and its Applications (COMAP) and have been disseminated in several publications. This session will focus on modules and other materials that would be useful for a modeling class.

MAA CP I1 THEORY AND APPLICATIONS OF GRAPH THEORY

Howard L. Penn, United States Naval Academy
Carol G. Crawford, United States Naval Academy
T. S. Michael, United States Naval Academy
Saturday, August 14, 3:15 pm - 5:15 pm

This session solicits papers on the teaching of undergraduate courses in graph theory as well as papers on research in the field of graph theory. Research papers should be accessible to a reasonably wide audience. Both papers in theoretical and applied graph theory are welcome. Papers on teaching should present new and innovative methods of teaching the course.

MAA CP J1 GETTING STUDENTS TO EXPLORE CONCEPTS THROUGH WRITING IN MATHEMATICS

Sarah L. Mabrouk, Framingham State College
Friday, August 13, 3:15 pm - 5:15 pm

This session invites papers about assignments/projects that require students to write about mathematical concepts, to express concepts and to interpret symbolic mathematics in their own words, and to write about mathematics, in general. These assignments can include conceptual papers such as having the students explain a concept in their own words as an answer to a question, in the form of a letter to a friend, a poem, or even a short story, project reports that require students to explain fully all concepts used as if to someone who knows little or nothing about the mathematics used in solving the project problem, assignments that require students to express theorems in *plain English* so that one of their friends could understand, or even simple assignments that require students to explain the meaning and the use of the variables and notations that they use.

MAA CP K1 STRATEGIES FOR TEACHING MULTIPLE AUDIENCES IN ONE CLASS

Carl Lienert, Fort Lewis College
Christopher Goff, University of the Pacific
Saturday, August 14, 1:00 pm - 3:00 pm

Mathematics classes across the curriculum are often populated by students who have different levels of preparation, widely diverse mathematical goals, or both. Providing a meaningful and appropriate learning experience to multiple audiences simultaneously presents a unique challenge to the instructor. One example is an abstract algebra class with traditional graduate school bound students as well as prospective high school teachers. Another example is college algebra whose students typically have a very wide range of preparations as well as diverse goals varying from general education credit to preparation for a long sequence of mathematics classes.

MAA CP L1 GENERAL CONTRIBUTED PAPER SESSION

Lucy Kimball, Bentley College
Thursday, August 12, 1:00 pm - 5:00 pm
Friday, August 13, 1:00 pm - 5:00 pm
Saturday, August 14, 1:00 pm - 5:00 pm

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

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.

THE NUTS AND BOLTS OF PERIODIC REVIEW

David Mazur, Western New England College
Kyle Riley, South Dakota School of Mines & Technology
Thursday, August 12, 1:00 pm - 2:20 pm

In section B of the MAA Guidelines for Programs and Departments there is a recommendation that each department in the mathematical sciences undergo a periodic review. The guidelines provide some helpful suggestions on what topics should be considered in such a review. Our panel discussion endeavors to provide practical advice on how to conduct an external review. As a starting point, the panelists will answer such questions as: How do we find and choose potential consultants to carry out the review? What should our written self-study contain? How does our department enact changes as a result of the review? There should be plenty of helpful advice whether your department has a well-established review process or if you are just starting out. Panelists include John Fulton, Clemson University; Bonnie Gold, Monmouth University; Jim Lewis, University of Nebraska at Lincoln; and Bill Marion, Valparaiso University.

USING THE CUPM CURRICULUM GUIDE 2004: GETTING GRANTS TO FACILITATE CHANGE

David Bressoud, Macalester College
Janet Andersen, Hope College
Thursday, August 12, 1:00 pm - 2:20 pm

One of the under-utilized sources of NSF funding is the Adaptation and Implementation (A&I) component of the Course, Curriculum, and Laboratory Instruction (CCLI) program. This session will explain how the *CUPM Curriculum Guide 2004* and its supplement, *Illustrative Resources of the MAA (IRMAA)*, can be used to identify programs at other institutions that can be adapted and implemented to meet significant needs at your own institution. It will also address how to put together a CCLI-A&I grant proposal that is attractive to NSF.

PRIZE SESSION

Friday, August 13, 11:30 am - Noon

Winners of the MAA awards for expository writing will be announced. Come and help us honor the authors of the best articles published in MAA journals.

USING THE CUPM CURRICULUM GUIDE 2004 TO FACILITATE CHANGE

David Bressoud, Macalester College
Amy Cohen, Rutgers University
Friday, August 13, 1:00 pm - 2:20 pm

The *CUPM Curriculum Guide 2004* is designed to facilitate change by helping departments to identify aspects of their programs that are working less than optimally. It recommends the directions in which change should take place and offers examples of how others at varied institutions have tackled these issues. This session will explain the structure of the Guide. It will also describe a set of “illustrative resources” currently being assembled to display current practices consistent with the Guide in various settings.

SUMMA SPECIAL SESSION ON NREUP

Bill Hawkins, MAA and the University of the District of Columbia
Bob Megginson, MSRI and the University of Michigan
Friday, August 13, 1:00 pm - 2:20 pm

Presenters will discuss their MAA Summer Research programs for small groups of under-represented students. These faculty were among the recipients of grants funded by NSF and NSA under the MAA National Research Experiences for Undergraduates Program (NREUP). There will be ample time for questions and discussion.

MATHEMATICAL MODELING IN AP CALCULUS

Daniel J. Teague, The North Carolina School of Science and Mathematics
Friday, August 13, 1:00 pm - 4:00 pm

This session is designed specifically for teachers of AP Calculus (both AB and BC). The participants will be engaged in modeling activities that illustrate how mathematical modeling can be used to motivate, develop, and apply the methods of elementary calculus in the AP curriculum. The session will investigate modeling contexts that can be used during the course to develop and apply techniques as they naturally arise during the year and modeling contexts that can be used as culminating activities for the course after the AP exam.

SIGMA ON THE PHILOSOPHY OF MATHEMATICS BUSINESS MEETING AND INVITED ADDRESS

Roger Simons, Rhode Island College
Friday, August 13, 2:30 pm - 3:50 pm

Philip Davis, of Brown University, will give an invited address at the meeting. The title of his talk will be “The Decline, Fall, and Current Resurgence of Visual Geometry.”

BUSINESS MEETING

Saturday, August 14, 11:30 am - Noon

MAA/RUME PANEL DISCUSSION ON THE ICME-10 MEETING

Annie Selden, Tennessee Technological University
Martha Siegel, Towson University
Saturday, August 14, 1:00 pm - 2:20 pm

Panelists including Martha Siegel, Annie Selden, and Andy Magid will report on the ICME-10 meeting held in Copenhagen July, 2004.

WHEN ARE TWO TEACHERS BETTER THAN ONE?

Janet Andersen, Hope College
Stephanie Fitchett, Florida Atlantic University – Honors College
Saturday, August 14, 1:00 pm - 2:20 pm

This session will introduce and elaborate on the issues involved in team-teaching. There will be a panel followed by small group discussion. Topics addressed will include: “How to start?”, “What are the advantages?”, “What are the obstacles and how do you get past them?”, “What courses are suitable for team-teaching?”, “How do you maintain team-teaching?”

INTRODUCTION TO WEBWORK A WEB BASED HOMEWORK SYSTEM

Michael G. Gage, Arnold K. Pizer, and Vicki Roth, University of Rochester
Saturday, August 14, 1:00 pm - 3:00 pm

WeBWorK is a program which allows students to do their mathematical homework over the web. It is currently being used by over 70 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 found in a typical calculus text and is distributed with a library of over 3900 problems. With WeBWorK students get immediate feedback on the validity of their answers and have the opportunity to correct mistakes while they are still thinking about the problem. Students receive individualized versions of problems so instructors can encourage students to work together, yet each student must develop an answer to their own version of the problem. Further WeBWorK provides automatic scoring of assignments. This session will provide an interactive introduction to WeBWorK. We will demonstrate how students use WeBWorK, how professors administer WeBWorK and write new problems, and will also discuss various assessment issues related to WeBWorK. Further information on WeBWorK can be found at <http://webwork.math.rochester.edu>.

“SMALL” MATHEMATICS

Frank Morgan, Williams College
Saturday, August 14, 1:00 pm - 3:30 pm

Talks by alums and faculty of Williams College NSF “SMALL” Undergraduate Research Project.

AP CALCULUS WORKSHOP: THE FUNDAMENTAL THEOREM OF CALCULUS AND INFINITE SERIES

David Bressoud, Macalester College
Ben Klein, Davidson College
Saturday, August 14, 1:00 pm - 4:00 pm

The first half will introduce materials to help students understand and use the power of being able to treat definite integration as either anti-differentiation or as a limit of Riemann sums. The second half will introduce topics and techniques intended to help students better understand and work with infinite series of constants and with power series.

ACTUARIAL EDUCATION

Richard London, University of Connecticut
Saturday, August 14, 2:30 pm - 3:50 pm

The Society of Actuaries has made some small, but significant, changes in its recommended educational curriculum and associated credentialing exam program. These changes will be effective in 2005. Schools with full actuarial science programs and those with actuarial concentrations within a mathematics or statistics department might want to modify their programs, at least slightly, in light of the SOA changes. This session will provide the information needed to accomplish this.



Providence Waterfront

Graduate Student SESSIONS

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

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

Diane Hermann, University of Chicago
David Manderscheid, University of Iowa
Thursday, August 12, Noon to 2:20 pm

How are T.A. training sessions set up? What are the similarities and differences between such sessions? How can case studies be used in support of T.A. training? How might T.A. training compare with preparing your faculty? We will provide a skeleton outline of possible training approaches for individual institutions and for section-level training programs.

GETTING YOUR THESIS READY FOR PUBLICATION

Sol Friederg, Boston College
Donna Flint, South Dakota State University
Thursday, August 12, 2:30 pm - 3:50 pm

What steps are needed to turn your thesis into a publishable paper? What should you cut? Should you figure out those last points you were stuck on? How long should this take? Should you ask someone to look at it before you consider it finished? Where should you submit your draft once you're ready? How do you do that? What if your submission is rejected? And what if it is accepted? Publishing your thesis means sharing the fruit of your years of hard work with the world, completing one stage of your career and embarking on the next. This panel will explore this important and exciting step and discuss aspects of publishing your research. Panelists include Ann Kizanis, Associate Professor of Mathematics and Associate Dean, School of Arts and Sciences of Western New England College; Darren A. Narayan, Assistant Professor and Director of Undergraduate Research in the Department of Mathematics and Statistics of Rochester Institute of Technology; and Mike Rosen, Professor of Mathematics Brown University.

CHOOSING THE RIGHT JOB FOR YOU

Christopher Simons, Rowan University
Will Dickinson, Grand Valley State University
Thursday, August 12, 4:00 pm - 5:20 pm

For almost everyone, the transition from graduate school to their first academic job is difficult. The process of changing from graduate school to a 'real' job often involves a paradigm shift in how you think about mathematics and deciding what kind of mathematician you want to become. In this transition there are a number of issues that you need to decide. Do you want to focus on research or teaching? Small college or large university? In this panel we will have speakers from a variety of different situations and backgrounds, describe their job ex-

pectations and explain why they chose it. It is hoped that the speakers will give the audience a taste of the different types of jobs that are possible after graduate school. Panelists include: Frank Swenton, Middlebury College; Maria Robinson, Seattle University; Reva Kasman, Grand Valley State University; Amy Ksir, U.S. Naval Academy; and Mike Latina, Community College of Rhode Island. There will be time for questions from the audience at the end of the panel.

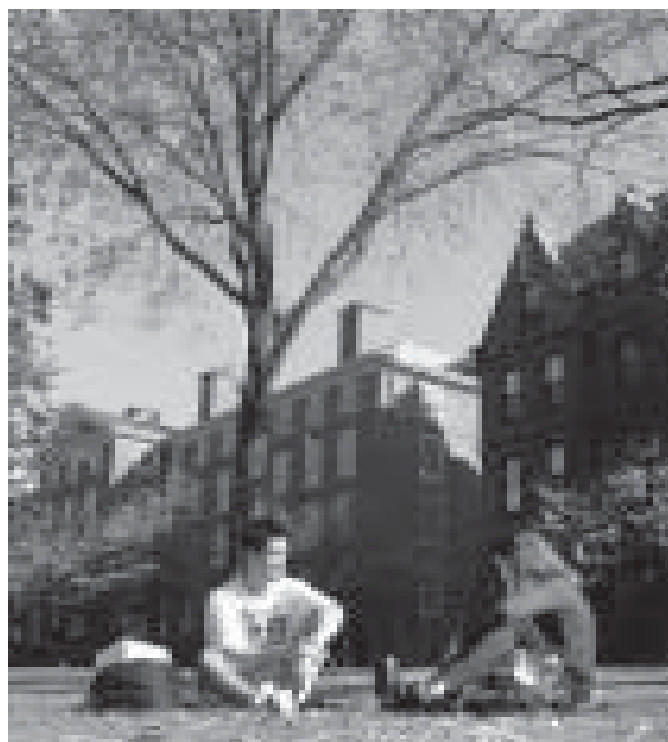
GRADUATE STUDENT RECEPTION

Thursday, August 12, 5:30 pm - 6:30 pm

PREPARING YOUR RESUME

Katherine Socha, Michigan State University
Friday, August 13, 1:00 pm - 2:20 pm

In this session, experienced panelists and audience participants will discuss elements of a successful resume or cv. We will provide examples and lessons drawn from those examples, based on the panelists experience from both sides of the hiring table. Panelists will include Edward Burger, Williams College; Katherine Socha, Michigan State University; and David Kung, St. Mary's College of Maryland.



TIPS ON INTERVIEWING

Dave Mazur, Western New England College

Friday, August 13, 2:30 pm - 3:50 pm

Mathematics departments, when conducting a search, typically use a variety of interviewing methods. In addition to the all-important on-campus interview, a department usually conducts additional interviews over the phone or at the Joint Meetings. What is the purpose of each type of interview? How should you prepare for each? What should you expect? What do potential employers look for? This panel discussion aims to provide informative, practical advice on interviewing by answering these questions as well as others from the audience. The panelists represent a diversity of school sizes as well as years of experience. Panelists will include Dennis Luciano, Western New England College; Christopher Teixeira, Rhode Island College; and Jackie Jensen, Sam Houston State University.

NEGOTIATING WITH THE DEAN

Kimber Tysdal, Hood College

Jacqueline Jensen, Sam Houston State University

Saturday, August 14, 1:00 pm - 2:20 pm

This panel will address the fine art of negotiating with the dean. Panelists will discuss their experiences with negotiation, par-

ticularly negotiation prior to accepting an offered position. Plenty of advice will be dispensed, and there will be lots of time for questions. Panelists will include Jon Jacobsen, Harvey Mudd College; Katharine Socha, Michigan State University; David Kung, St. Mary's College of Maryland; and Charles Hadlock, Bentley College.

THE FIRST YEAR EXPERIENCE AS A FACULTY MEMBER

Carol Bell, SUNY-Cortland

Julie Jones, Sam Houston State University

Saturday, August 14, 2:30 pm - 3:50 pm

Want to know the real story behind the first year experience? Listen as panelists provide information on their personal experiences during their first year as a faculty member. Topics include the faculty as a role model; organizing and interacting with students in MAA student chapters; and balancing teaching, research, and service. There will also be a question and answer period. The panelists will include Carol J. Bell, Associate Professor of Mathematics and Coordinator of Adolescence Mathematics Education at SUNY Cortland; Julie C. Jones, Sam Houston State University; Russ Goodman, Central College; Berit Givens, Cal Poly Pomona; and Lew Ludwig, Denison University.

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 11, 5:30 pm - 6:30 pm

STUDENT HOSPITALITY CENTER

Richard and Araceli Neal, University of Oklahoma

Thursday, August 12, 9:00 am - 5:00 pm

Friday, August 13, 9:00 am - 5:00 pm

Saturday, August 14, 9:00 am - 1:00 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. Special information for students can be found at MAA Online at <http://www.maa.org> and <http://www.pme-math.org>.

MAA STUDENT PAPER SESSIONS

Thomas E. Kelley, Henry Ford Community College

Thursday, August 12, 1:00 pm - 5:00 pm

Friday, August 13, 1:00 pm - 5:00 pm

PI MU EPSILON PAPER SESSIONS

Jennifer Galovich, St. John's University

Thursday, August 12, 1:00 pm - 5:00 pm

Friday, August 13, 1:00 pm - 5:00 pm

MAA MATHEMATICAL CONTEST IN MODELING (MCM) WINNERS

Ben Fusaro, Florida State University

Thursday, August 12, 5:00 pm - 5:50 pm

PME BANQUET

Friday, August 13, 6:00 pm - 7:45 pm

PME J. SUTHERLAND FRAME LECTURE

WHEN FIVE COLORS SUFFICE

Joan P. Hutchinson, Macalaster College

Friday, August 13, 8:00 pm - 9:00 pm

The challenging four-color conjecture, posed in 1852, asks whether four colors are enough to color the regions of any map so that two regions that share a boundary receive different colors. In 1976 K. Appel and W. Haken proved that four colors suffice. With some changes to the problem, four colors may no longer be enough. We discuss these variations in which five, not four, colors suffice.

MAA STUDENT WORKSHOP

TOPICS IN FRACTAL GEOMETRY

Benoit Mandelbrot

Saturday, August 14, 1:00 pm - 2:50 pm

MAA STUDENT LECTURE

THE SECRET OF BRUNELLESCHI'S CUPOLA

Mario Martelli, Claremont-McKenna College

Saturday, August 14, 3:00 pm - 3:50 pm

In 1420 the architect Filippo Brunelleschi won the competition for building the "octagonal cupola" of Florence's cathedral. His innovative design did not use centering. Brunelleschi built a model to show that his proposal would work, but he categorically refused to reveal his secret. The mystery remains today, but a recent mathematical analysis has been able to lift the veil from parts of Brunelleschi's design. How? Come to the talk to find out.

CALL FOR MINICOURSE ORGANIZERS

The MAA Committee on Minicourses is soliciting proposals for minicourses to be given at MathFest 2005 in Albuquerque, New Mexico, August 4-6, and at the Joint Mathematics Meeting in San Antonio, Texas, January 1-15, 2006. Most minicourses are related to undergraduate curriculum, although any topic of interest to the MAA membership will be considered.

Send proposals (preferably by e-mail) to Jimmy Buchanan, Department of Mathematics, Hiram College, Hiram, OH 44234, buchananvm@hiram.edu. To find more information on how to submit a proposal see <http://www.maa.org/meetings/miniguide.htm>. The deadline for submissions for the Albuquerque MathFest is October 12, 2004 and for the San Antonio Joint Mathematics Meeting it is December 7, 2004.

MATH HORIZONS SPECIAL STUDENT SESSION

Arthur T. Benjamin, Harvey Mudd College
Jennifer J. Quinn, Occidental College
Saturday, August 14, 4:00 pm - 4:30 pm

Meet the editors of *Math Horizons*. It is the MAA's magazine written 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.

STUDENT PROBLEM SOLVING COMPETITION

Richard Neal, University of Oklahoma
Saturday, August 14, 4:45 pm - 5:45 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.

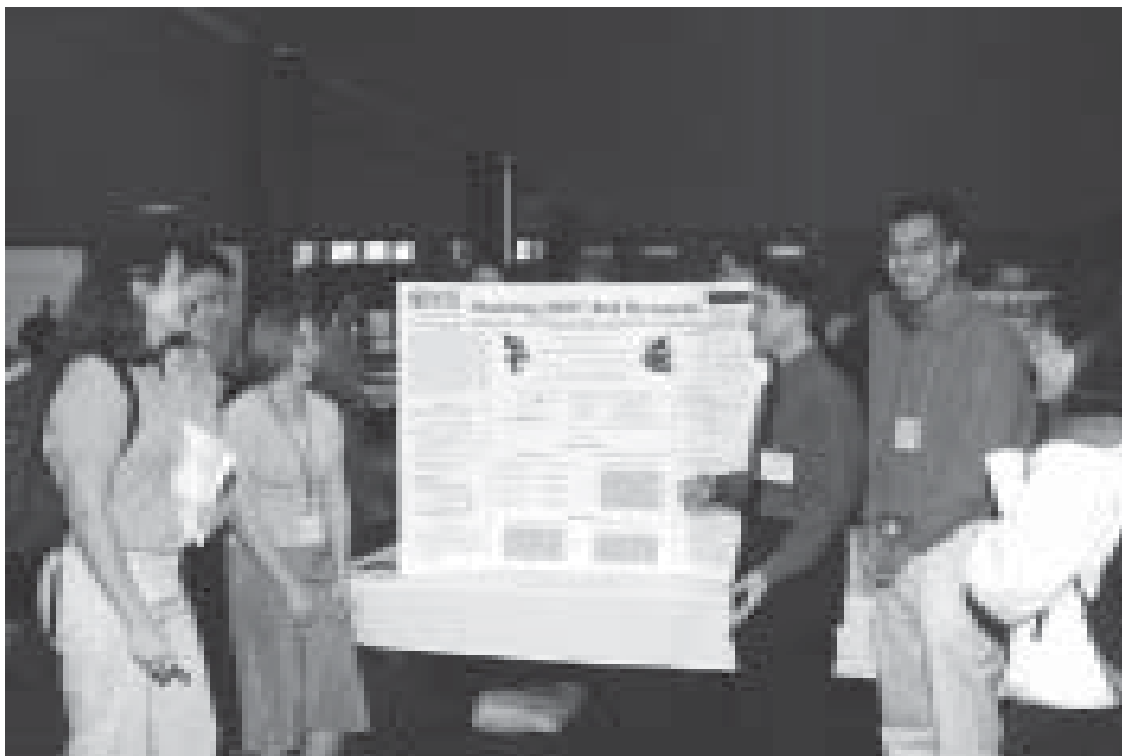
CALL FOR STUDENT PAPERS

Students who wish to present a paper at MathFest 2004 in Providence, Rhode Island must be nominated by a faculty advisor familiar with the work to be presented. To propose a paper for presentation, the student must complete a form and obtain the signature of a faculty sponsor.

Nomination forms for the MAA Student Paper Sessions are located on MAA Online at www.maa.org under STUDENTS, or can be obtained from Dr. Thomas Kelley <tkelley@hfcc.net> at Henry Ford Community College (313) 845-6492.

Students who make presentations at the MathFest, and who are also members of MAA Student Chapters, are eligible for partial travel reimbursement. Travel funds are limited this year so early application is encouraged. The deadline for receipt of applications is July 2, 2004.

PME student speakers must be nominated by their chapter advisors. Application forms for PME student speakers can be found on the PME web site www.pmemath.org or can be obtained from PME Secretary -Treasurer, Dr. Leo Schneider <leo@jcu.edu>. Students making presentations at the Annual Meeting of PME are eligible for partial travel reimbursement. The deadline for receipt of abstracts is July 2, 2004.



Students gather at a recent poster session.

Register Online at www.maa.org

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

MINICOURSE #1

A DYNAMICAL SYSTEMS APPROACH TO THE DIFFERENTIAL EQUATIONS COURSE

Paul Blanchard, Boston University

Part 1: Thursday, August 12, 1:00 pm - 3:00 pm

Part 2: Friday, August 13, 1:00 pm - 3:00 pm

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

MINICOURSE #2

GRAPHS FOR MODELING LARGE STRUCTURES AND RIGID STRUCTURES

Jack Graver, Syracuse University

Part 1: Thursday, August 12, 1:00 pm - 3:00 pm

Part 2: Friday, August 13, 1:00 pm - 3:00 pm

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

MINICOURSE #3

BRIDGING THE GAP BETWEEN MATHEMATICS AND THE PHYSICAL SCIENCES

Tevian Dray, Oregon State University

Part 1: Thursday, August 12, 3:15 pm - 5:15 pm

Part 2: Saturday, August 14, 1:00 pm - 3:00 pm

The key to bridging the gap between mathematics and the physical sciences is geometric reasoning. This minicourse will introduce participants to the art of teaching geometric reasoning, emphasizing, but not limited to, vectors and vector calculus. Participants will use and discuss open-ended group

activities intended to foster geometric reasoning, which have been developed as part of the NSF-funded Vector Calculus Bridge Project at Oregon State University.

MINICOURSE #4

PMET - PREPARING MATHEMATICIANS TO EDUCATE TEACHERS: GRADES K-5

David C. Royster, University of North Carolina at Charlotte
Olaf Stackelberg, Kent State University

Part 1: Thursday, August 12, 3:15 pm - 5:15 pm

Part 2: Saturday, August 14, 1:00 pm - 3:00 pm

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

MINICOURSE #5

MAKING LIBERAL ARTS MATHEMATICS THE MOST IMPORTANT COURSE STUDENTS TAKE TO LEARN EFFECTIVE THINKING

Edward B. Burger, Williams College

Michael Starbird, University of Texas at Austin

Part 1: Friday, August 13, 3:15 pm - 5:15 pm

Part 2: Saturday, August 14, 3:15 pm - 5:15 pm

Mathematics contains great ideas and powerful methods of analysis that transcend mathematics. Topics such as infinity, the fourth dimension, probability, and chaos spark everyone's imagination. These ideas are comparable to masterpieces of art, philosophy, and literature. Our challenge is to convey the genuinely deep ideas of mathematics and the important strategies of analysis and thought in a lively, fun, and enticing manner. Here participants will experience hands-on methods for bringing deep mathematical results and general techniques of thought to life for those who are not math fans.

MINICOURSE #6

FAIR ENOUGH? MATHEMATICS OF EQUITY

John C. Maceli and Stanley E. Seltzer, Ithaca College

Part 1: Friday, August 13, 3:15 pm - 5:15 pm

Part 2: Saturday, August 14, 3:15 pm - 5:15 pm

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

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

TWO-DAY SHORT COURSE

Random Matrix Theory

Alan Edelman, Massachusetts Institute of Technology

Part 1: Tuesday, August 10, 9:00 am - 5:00 pm

Part 2: Wednesday, August 11, 9:00 am - 5:00 pm

Random matrix theory: It is mathematics; it is statistics; it is physics; it is engineering. It is stochastic equation solving in its most glorious form. There have been applications for decades, yet the subject is not sufficiently well-known or well-understood for all of the applications to have been realized. One-by-one the word has to spread. This is a start.

In this course we will review the theory from the finite to the infinite. We will consider Gaussian ensembles and Wishart matrices. There will be Riemann zeta and Painleve for the mathematicians. There will be zonal polynomials and hypergeometrics of matrix argument for the statisticians. We will emphasize applications to wireless communication not only for its own sake but as a case study for other applications to follow.

Lecture 1

MOPs — Multivariate Orthogonal Polynomials (symbolically) or A Maple Library to Clean Up Messy Integrals

Ioana Dumitriu (UC Berkeley)

Many statistical, physical, and engineering problems require the use of random matrix theory, and with it, the computation of a certain messy multivariate integral (sometimes parameter-dependent) over a subset of the real line. Using multivariate orthogonal polynomial theory, we have written and implemented in Maple a set of codes which provide a unified way of dealing with such computations, for certain classical types of random matrices. These codes are fast (in a relative sense, as the complexity of the problem is super-polynomial) and have the advantage of working both symbolically and numerically. We will discuss a few problems, the computations they involve, and demonstrate the performance of MOPs in each case.

Lecture 2

How Eigenvalues of Random Matrices Can Be Used to Solve Problems in Wireless Communications

Moe Win (MIT) and Marco Chiani (University of Bologna)

You are a medieval knight and you want to send an important message to the king in another country. Unfortunately, the

messages that you send may become stained or soaked with water! Furthermore, some routes may be closed due to natural and unnatural events such as fire, floods, banditry, (and stray dragons). Your astrologer comes up with a brilliant idea: send multiple couriers along different routes in hopes that the received letters can be combined to make a coherent message. We consider a class of problems arising in wireless communications where we are given the statistical behavior of possible routes, and how we can use “route diversity” to improve the reliability of a wireless communication system. Finally, we will show why it is better to have more antennas on your Wi-Fi, or in medieval terms, more horses in your stables. We will show how the beautiful theory of random matrices and eigenvalues can be used to model this class of problems and give insights into the design of future communication systems.

Lecture 3

Random Matrix Manipulations and Free Probability

(or Would you probably be free for a course in free probability?)

Raj Rao (MIT)

In traditional probability theory, independence of random variables allows one to easily compute the distribution of the sums or products of these variables. For random matrices, freeness is the analogous concept that allows us to compute the distribution of the eigenvalues of the sums or products or other functions of random matrices. Freeness turns out to be important and quite powerful because unlike scalar random variables, the order in which the random matrices are multiplied matters. Free probability is the theory that tells us what it means to be “free” and what we can or cannot do when the variables in question are “free”. We will discuss free probability and demonstrate how it can be used to compute the distribution of seemingly intractable functions of random matrices. This is joint work (more accurately, joint fun) with Alan Edelman (MIT)

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 2004 Exhibit Hall. This is your opportunity to review the latest books, test innovative calculators, and preview software. Meet company representatives and receive feedback that will assist you in making purchasing decisions.

In the Exhibit Hall visit the popular MAA Bookstore. There you can select from MAA's extensive collection of books on mathematics education, and related topics. Purchase MAA titles at the meeting and you'll save money with a special discount.

New and exciting in the exhibit hall this year is a food station, 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. We will also feature a special beverage and food reception sponsored by Addison-Wesley on Friday, August 13th.

LOCATION:

Rhode Island Convention Center
One Sabin Street
Providence, RI 02903

EXHIBIT HOURS:

Thursday, August 12, 2004	9:00 am – 5:00 pm
Friday, August 13, 2004	9:00 am – 5:00 pm
Saturday, August 14, 2004	9:00 am – 3:00 pm

Exhibitors

A K Peters, Ltd.
ACTEX Publications
Addison-Wesley **Sponsor**
American Mathematical Society
American Mathematics Competitions
Birkhauser Boston, Inc.
Brooks/Cole, a part of The Thomson Corporation
Cambridge University Press
Hawkes Learning Systems
ISAMA – International Society of the Arts, Mathematics,
and Architecture
Johns Hopkins University Press
Key College Publishing **Sponsor**
MacKichan Software
Mathematical Association of America (Publications)
Mathematical Association of America (Membership)
Mathematics Throughout the Curriculum
Navajo Jewelry & Crafts
Prentice Hall
Springer-Verlag New York, Inc.
Taylor & Francis
Texas Instruments, Inc. **Sponsor**
WebAssign
W.H. Freeman & Company
Wiley



The MAA Book Exhibit at the winter meeting.

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

Faculty for whom the 2004-2005 academic year will be the first or second year of full-time teaching at the college/university level are invited to apply to become Project NExT Fellows. For more information see the Project NExT website at <http://archives.math.utk.edu/projnext/>.

Participation in the Project NExT workshop at MathFest 2004 is restricted to those who applied and were selected as Project NExT Fellows. Those chosen as 2004-05 Fellows will receive notification and an invitation to participate in the program.

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

Each year there is an opportunity for about sixty faculty members from colleges and universities throughout the country to become Project NExT Fellows. Applications must be received by April 16, 2004. Institutions employing Project NExT Fellows are expected to provide travel expenses for the meetings, and assurances of institutional support are of critical importance in the application process. Application materials and more information are available on the Project NExT webpage (<http://archives.math.utk.edu/projectnext/>).

Project NExT Workshop for 2003-2004 and 2004-2005 Fellows

Monday, August 9 th	1:30 pm – 9:00 pm (for 2004-05 Fellows)
Tuesday, August 10 th	8:30 am – 5:25 pm (for 2004-05 Fellows)
Wednesday, August 11 th	8:15 am – 5:45 pm (for 2003-04 and 2004-05 Fellows)

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

- Innovative approaches to teaching a variety of introductory and advanced courses;
- Effective strategies for incorporating mathematical modeling into the curriculum;
- Using writing and reading to teach mathematics;
- Involving undergraduates in mathematical research;
- Alternative methods of assessing student learning;
- Perspectives from pedagogical research;
- Getting your research off to a good start and writing grant proposals;
- Balancing teaching and research.

During the following year, Project NExT Fellows will participate in an electronic network that links Project NExT Fellows with one another and with distinguished teachers of mathematics, special events at the 2005 Joint Mathematics Meetings, and a one-day workshop and the MAA MathFest in the summer of 2005. There is no fee for participation in Project NExT itself, and the 2004-05 Fellows will be provided with room and board at the Project NExT Workshop in Providence.

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, and the Greater MAA fund.

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

OPENING RECEPTION

Wednesday, August 11, 6:30 p.m - 7:30 pm

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

OPENING BANQUET

Wednesday, August 11, 7:30 pm - 9:30 pm

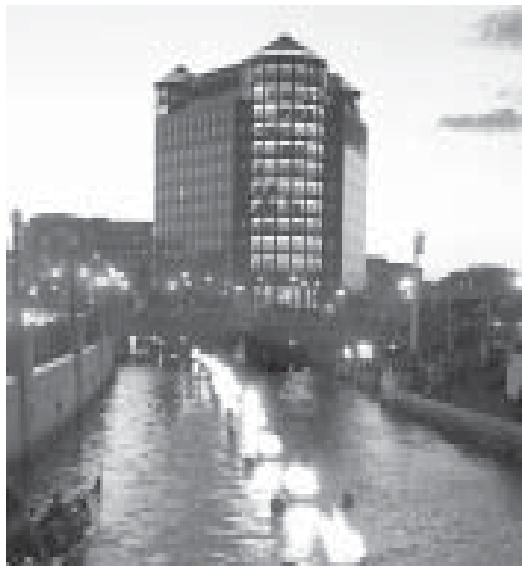
Master of Ceremonies: Annalisa Crannell, Franklin & Marshall College. Continue this exciting evening by joining new and long-time friends and colleagues for a dinner of grilled lemon and thyme marinated breast of chicken. There will be an after-dinner presentation on “Captivating Stories for Mathematics Students” by Dan Kalman. Tickets are **\$34** and are available **ONLY** through advance registration. (A vegetarian substitution is available.)

PME BANQUET

Friday, August 13, 6:00 pm - 7:45 pm

Tickets are **\$20** for PME members and their families as well as for MAA Student Chapter members and students giving talks in MAA Student Paper Sessions, and **\$30** for nonmembers. Purchasing tickets through advanced registration is recommended, since only a limited number of tickets will be available for sale onsite.

After the banquet, at 8:00 p.m., attend the popular PME/J. Sutherland Frame lecture, “When Five Colors Suffice” given this year by Joan P. Hutchinson, Macalester College.



Waterfire Providence

AWM RECEPTION

Friday, August 13, 9:00 pm - 11:00 pm

Plan to attend this cooperative party with the Association for Women in Mathematics on Friday evening at 9:00 p.m. following the Frame Lecture. All supporters of women in mathematics are encouraged to attend and to meet AWM members.

SILVER AND GOLD BANQUET

Saturday, August 14, 6:00 pm - 9:30 pm

Everyone is welcome at the Silver and Gold banquet honoring those individuals who have been members of the MAA for 25 years or more. The emcee will be Jim Tattersall of Providence College. Thomas Banchoff of Brown University will be the featured speaker. The title of his talk will be “Dali at 100: Geometry in Many Dimensions.”

There will be a cash-bar reception beginning at 6:00 p.m. with the banquet following at 6:30 p.m. There are three menu choices: chicken, vegetarian or herb crusted salmon. Tickets for the chicken or vegetarian dinner are **\$34** and tickets for the herb crusted salmon dinner are **\$42**. Purchasing tickets through advanced registration is recommended, since only a limited number of tickets will be available for sale onsite.

MATHFEST DINNER AND SOCK HOP DANCE

**Thursday, August 12
6:00 pm - 10:00 pm**

Step back in time and reminisce at an old style Sock Hop. Participants are invited to don their saddle shoes, poodle skirts, varsity sweaters, and get ready to dance the night away to the music of the 50s and 60s. You can twist. You can stroll. You can cha-cha or you can jitterbug.



Then you can eat at the buffet, which will include diner fare comfort foods that will bring back the feelings of the era: menu includes hamburgers, cheeseburgers, macaroni and cheese, cole slaw, etc. (Veggie burgers will be available on request). And you can top off your meal with a Rhode Island Cabinet Station— an ice cream milkshake—plus your choice of cobblers, ice cream, or brownies. Cash bar will also be available.

Tickets are \$39.00 for adults and \$12.75 for children.

Purchasing tickets through advanced registration is recommended, since only a limited number of tickets will be available for sale onsite.

EXHIBIT HALL RECEPTION

Friday August 13, 3:00 pm - 4:30 pm

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

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



The Mathematical Association of America's Professional Enhancement Program (PREP) enables faculty in the mathematical sciences to respond to rapid and significant developments that impact undergraduate mathematics. PREP workshops offer extended professional development experiences with active involvement by all participants, leadership by experts, and a commitment by participants to make use of what they learn. To achieve a sustained impact, PREP workshops extend over time with preparatory, intensive and on-going components. Follow-up components are typically held in conjunction with the Joint Mathematics Meetings each January. Apply online at <http://www.maa.org/prep>.

Summer 2004 Professional Enhancement Programs

Geometric Combinatorics

Cosponsored by the Mathematical Sciences Research Institute (MSRI)

May 23-27, 2004 - Mathematical Sciences Research Institute, Berkeley, CA

Registration: \$250

Application Deadline: April 16, 2004

Francis Edward Su

Mathematics Meets Biology: Epidemics, Data Fitting, and Chaos

May 26 - 29, 2004 - University of Louisiana at Lafayette, Lafayette, LA

Registration: \$250

Application Deadline: April 16, 2004

Azmy Ackleh, Sophia Jang

Nifty Applications in Discrete Mathematics

June 7-11, 2004 - Valparaiso University Valparaiso, IN

Registration: \$250

Application Deadline: April 23, 2004

Bill Marion, Doug Baldwin, Susanna Epp, Peter Henderson

The Geometry of Vector Calculus

Material for this workshop developed with support from NSF Grants DUE-0088901 and DUE-0231032

June 18-22, 2004 - Mount Holyoke College, South Hadley, MA

Registration: \$250

Application Deadline: May 7, 2004

Tevian Dray, Corinne Manogue

Statistical Ratemaking

With support from the Casualty Actuarial Society

June 21-25, 2004 - Tulane University, New Orleans, LA

Registration: \$250

Application Deadline: May 7, 2004

Tom Struppeck

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

Co-sponsored by Key College Publishing and COMAP, Inc.

June 21-25, 2004 - Foothills Conference Center, University of California-Berkeley, Berkeley, CA

Registration: \$250

Application Deadline: May 7, 2004

Nancy Crisler, Gary Simundza

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

June 24-27, 2004 - Washington, DC

Registration: \$500

Application Deadline: May 14, 2004

Arnie Ostebee

Exploring Abstract Algebra Using Computer Software

June 28 - July 2, 2004 - Online from Saint Louis University, Saint Louis, MO

Registration: \$100

Application Deadline: May 14, 2004

Russell Blyth, Julianne Rainbolt

Computational and Mathematical Biology

Offered in conjunction with the National Computational Science Institute workshop on Computational Biology for Biology Educators

July 11-17, 2004 - North Carolina Agricultural and Technical University, Greensboro, North Carolina

Registration: \$300

Application Deadline: May 28, 2004

Eric Marland, Robin Davies, Chris Fall, Laurie Heyer, Timothy Lewis, Raina Robeva

Quantitative Literacy Across the Curriculum:

Everybody's Project

August 17-20, 2004 - Sleeping Lady Mountain Resort, Leavenworth, Washington

Registration: \$250

Application Deadline: July 2, 2004

Emily Lardner, Gillies Malnarich, Caren Diefenderfer, Dorothy Wallace, Jan Ray, Len Vacher, Kim Rheinlander,

Sue Mente, Deann Leoni, Judy Moran, Rob Cole, Jerry Johnson

PREP is a project of the MAA funded by the National Science Foundation DUE. PREP programs are equally open to all faculty, independent of whether or not they are members of the MAA or any other professional organization. Application materials and additional information available at <http://www.maa.org/prep>. Register early as space is limited.



Workshops for Summer 2004

A growing set of national reports calls for better preparation of the nation's mathematics teachers by mathematics faculty. To help meet this need, the Mathematical Association of America has developed a multifaceted program, Preparing Mathematicians to Educate Teachers (PMET). During summer 2004, PMET will offer eight new workshops for college and university faculty members who teach mathematics courses taken by prospective teachers. Each workshop will focus on preparing teachers for elementary, middle, or secondary school mathematics. Participants will observe demonstration classes, providing an opportunity to learn about the mathematical thinking processes of students preparing for careers in teaching. Participants will also have opportunities to share ideas, discuss, and learn more about appropriate content and ways of teaching prospective teachers more effectively.

Elementary-level Workshops:

June 13-19, 2004

**Humboldt State University
Arcata, CA**

Phyllis Chinn and Dale Oliver

June 13-25, 2004

**Kent State University
Kent, OH**

Michael Battista and Olaf Stackelberg

July 11-17, 2004

**State University of New York
at Stony Brook
Stony Brook, NY**

Kathy Ivey and Alan Tucker

August 1-7, 2004

**University of Nebraska-Lincoln,
Lincoln, NE**

Ruth Heaton and Jim Lewis

Middle School-level Workshops:

May 30-June 6, 2004

**Appalachian State University
Boone, NC**

Holly Hirst and David Royster

June 20-27, 2004

**Bowling Green State University
Bowling Green, OH**

Thomas Hern and Barbara Moses

Secondary-level Workshops:

June 6-18, 2004

**State University of New York
at Oswego
Oswego, NY**

Jack Narayan and Steven West

June 21-July 2, 2004

**University of San Diego
San Diego, CA**

Magnhild Lien and Perla Myers

PMET is supported by the National Science Foundation grant DUE-0230847, with additional support for workshops from Texas Instruments. Check the project website for full information, including workshop descriptions and applications: <http://www.maa.org/pmet>.

REGISTRATION INFORMATION

REGISTRATION DESK:

The registration desk will be located on the ground floor of The Westin Providence Hotel outside the Narragansett Grand Ballroom. It will be open Wednesday, August 11 from noon to 7:00 p.m., Thursday, August 12 and Friday, August 13 from 8:00 a.m. to 4:00 p.m., and Saturday, August 14 from 8:00 a.m. to 2:00 p.m. You may pick up your registration materials, register on-site, and purchase event tickets, where available, at this location.

REGISTRATION FEES

	By 6/30	After 6/30
Member Registration fee	\$185	\$240
Nonmember	\$270	\$345
Grad Student	\$ 40	\$ 50
Undergraduate Student	\$ 25	\$ 30
Unemployed	\$ 40	\$ 50
Individual from a		
Developing Country	\$ 40	\$ 50
K-12 Teacher	\$ 40	\$ 50
Emeritus member	\$ 40	\$ 50
One-day T F S	\$ 99	\$ 99
High School Student	\$ 10	\$ 10
Guest	\$ 15	\$ 15
Minicourses	\$ 60	\$ 70
Short Course		
MAA or AMS Member and MathFest Participant	\$125	\$140
NonMember or MathFest NonParticipant	\$175	\$190
Students	\$ 50	\$ 60

EARLY BIRD REGISTRATION:

Register by **June 30** to take advantage of the early bird savings and receive your registration packet before the meeting. Registration packets will be mailed during the week of **July 19** and there will be no need to come to the registration desk once you arrive.

REGULAR REGISTRATION:

Advance Registration/Housing Forms received after **June 30** and before **July 27** must include regular registration fees. Participants registering during this period must pick up their registration packets at the registration desk. Participants may also register on-site at the registration desk.

MINICOURSE/SHORT COURSE REGISTRATION:

Advance Registration/Housing Forms must be received by **July 27**. Enroll early; space is limited! If a course is full, you will be notified. On-site registration is allowed if enrollment permits. The MAA reserves the right to cancel courses due to low enrollment. Full refunds will be issued for cancelled courses. Otherwise, minicourse and/or short course cancellations must be received by **August 10** to receive a 50% refund.

MATHFEST CANCELLATIONS:

MathFest cancellations must be received by **August 10** to receive a 50% refund for registration. If your registration packet was mailed before your cancellation, you must return your badge to the MMSB, P. O. Box 6887, Providence, RI 02940 to receive your refund.

PAYMENT/MAILING ADDRESS

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

Mathematics Meetings Service Bureau (MMSB)

P. O. Box 6887
Providence, RI 02940-6887
Fax: 401-455-4004

ONLINE REGISTRATION:

Register on the internet for MathFest, university housing, and reservations at the Westin Providence Hotel. Go to www.maa.org and click on "Register for MathFest 2004." Credit card payment is required for internet registration. Payment is accepted with the following credit cards: MasterCard, Visa, American Express, and Discover.

Questions/Changes on Registration and Housing:

1-800-321-4267, ext. 4143 or 4144
Email: mmsb@ams.org

MATHFEST HOUSING

Rooms may be reserved at the Westin Providence and Brown University.

HOTEL

Reservations at the Westin Providence Hotel **must be made through the Mathematics Meetings Service Bureau (MMSB) via the MathFest Registration/Housing Form.** Reservations made with the hotel directly will be subject to a higher room rate. The MMSB can process reservations and changes until

4:00 p.m. on July 8, 2004. Reservations and changes for the Westin Providence Hotel can be made directly with the hotel **starting on July 16, 2004.** Rates include an administrative fee for the meeting.

All rates are subject to a 12% room and state tax. Any reservations cancelled less than 24 hours prior to arrival will be subject to a cancellation fee equal to one night's stay. Changes made to departure date after check-in will be subject to a charge of one night plus tax. Rooms will fill quickly at this property so **participants are advised to reserve rooms as early as possible.** After deadlines listed, reservations can be made with the hotels based only on rate and space availability and at the hotels' discretion.

THE WESTIN PROVIDENCE HOTEL (HEADQUARTERS)

(# 2 on the Providence Downtown Map page 34)

Across the street and connected to the Rhode Island Convention Center

One West Exchange Street

Providence, RI 02903

\$155.00 single/double

(Reservations through MMSB only until July 8, 2004)



The Westin Providence Hotel

Environmentally friendly and full service hotel connected to the Rhode Island Convention Center; restaurants; lounge; fitness center; indoor pool; parking is \$10 per day for valet or garage or \$20 per day for valet overnight or garage overnight; physically challenged and nonsmoking rooms available; rooms include full amenities including free high speed internet access (no wireless); windows open.

A credit card number or a check in the amount of one night's stay is required to guarantee a room. Check-in: 3:00 p.m. Check-out: noon. Changes made to departure date after check-in will be subject to a charge of one night plus tax.

BROWN UNIVERSITY HOUSING

Single rooms are provided in The Vartan Gregorian Quadrangle and double rooms are provided in The Wriston Quadrangle. Both residence halls are located 1.12 miles from the Westin Providence Hotel and Rhode Island Convention Center (RICC). Shuttle service will be provided from the university to the Westin Hotel and RICC.

The Vartan Gregorian Quadrangle

(# 3 on the Providence Downtown Map page 34)

Air conditioned housing is available in single residence hall rooms in the Vartan Gregorian Quadrangle, which includes two buildings separated by a grass courtyard and surrounded by a fence with gates. These buildings have one elevator per building and are wheelchair accessible. They are located at 101 Thayer Street, Providence, RI 02904.

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

Participants should bring an alarm clock, telephone, and extra towels. Campus and local telephone service is provided at no charge, but telephones are not provided. For long-distance service, participants must use a credit card or calling card.

Coin-operated laundry facilities are located in the basement. Irons are not available.

The Wriston Quadrangle

(# 4 on the Providence Downtown Map page 34)

Double rooms are provided in the Wriston Quadrangle, a group of nine buildings separated by two grass courtyards and surrounded by a fence with gates and a moat. The Quadrangle is located between Charlesfield, Brown, George, and Thayer streets.

These residence halls do not have elevators and are not air conditioned. They are wheelchair accessible. Each room is equipped with an overhead light, a single-sized bed, pillow, a desk and chair, a dresser, a bookcase, and a closet. Rooms are made up with linen, pillow and case, blanket, two towels, a drinking glass and soap. There will not be a daily towel exchange. Bathrooms are located on each floor. Each has two or three sinks and stalls and a shower. They are cleaned daily.

Participants should bring an alarm clock, a telephone, extra towels, and a lamp. Campus and local telephone service is provided at no charge, but telephones are not provided. For long-distance service, participants must use a credit card or calling card.

Coin-operated laundry facilities are located in the basement. Irons are not available.

Check-In

Check-in is at the Vartan Gregorian Quadrangle Office in Building A at 101 Thayer Street, near Charlesfield Street daily between 8:00 am and 10:00 pm. Participants arriving after 10:00 pm should report to Vartan Gregorian Quadrangle and use the call box at the front entrance to notify Department of Public Safety that they need to get their room keys. Public Safety will meet them and issue them their room keys.

Internet Access

Internet access is available in the dorms without charge for participants bringing their own computers. In order to connect to the internet, participants will need an Ethernet adapter installed on their personal computer and a standard Ethernet cable (10 Base-T Category 5). The university network has been tested to support Farallon adapters for Macs and 3Com adapters for Windows PCs. Other Ethernet adapters may not be compatible with the Brown University network.

Further information on how to connect personal computers in the residence halls is online at www.brown.edu/Facilities/CIS/Doc/.

Reservations

Participants have the option of including a meal plan consisting of breakfast in their reservations. Cost per person occupying a bed is **\$55 per person, single with breakfast, \$49 per person, single without breakfast, \$45 per person, double with breakfast, and \$39 per person, double without breakfast.** Rates include an administrative fee for the meeting.

The meal plan starts with breakfast on 8/12 and ends with breakfast on 8/13. Breakfast is not offered for any other days. Sorry, refunds cannot be issued for meals missed or cancelled at the meeting. Only participants occupying a bed are eligible for the meal plan. The maximum number of persons in a room

is two. Residence hall accommodations are not recommended for children.

Reservations cannot be made directly with the university. Detailed room rates may be found on the MathFest Registration/Housing Form. Rooms will be available from **August 7** through **August 15**.

To reserve university housing, please send a completed Housing Form to the Mathematics Meetings Service Bureau (MMSB). All completed forms must be received by the MMSB by 4:00 p.m. on **July 8**. Changes may be accepted by the MMSB until 4:00 p.m. on **July 21**. A 15% cancellation fee will be charged for all university housing cancellations made by **July 21**. Unfortunately, refunds for changes and cancellations of university housing after **July 21** cannot be issued. The meal plan can only be purchased by **July 21**. Meal passes will not be sold onsite.

DINING

The Dining Hall for this meeting will be at the Verney Woolley, which is located 5 blocks from the residence halls. **Participants should take note of this before deciding to include the meal plan in their reservations.** Operation hours for breakfast are 7:30 a.m. to 9:30 a.m. Meals are all-you-can-eat cafeteria-style. Sorry, Kosher meals are not offered. Participants with the meal plan must show their meal pass for admission to the dining hall. **A very limited amount of meals will be available on a cash basis at either hall.**

Meals may be purchased at several eateries located within one to three blocks of the residence halls. Meals may also be purchased in downtown Providence. **Please note that a shuttle will be provided from the residence halls to the Westin Providence Hotel and RICC.**

PARKING

Parking is provided in a University owned lot across the street from the Vartan Gregorian Quadrangle. Parking is \$3.00 per car per night. Parking permits can be purchased at check in. **Parking permits cannot be purchased through advance registration.** Please note that parking on city streets at night is prohibited by Providence City Ordinance. Temporary 2-hour parking is available on Thayer Street in front of Vartan Gregorian Quadrangle.

SPECIAL EXHIBITS

During the Providence MathFest, the John Hay Library at Brown University will display a full "Flatland" exhibit along with a display of a few significant mathematical texts from holdings. In addition Waterfire, Barnaby Evans' award winning fire sculpture installation on the three rivers in downtown Providence, will be held Saturday evening, August 14.

TRAVEL INFORMATION:

AIRLINE INFORMATION: United Airlines is the official airline for MathFest 2004. To obtain a discounted fare on United Airlines make your reservations by calling 1-800-521-4041 between the hours of 8:00 a.m. and 10:00 p.m., Eastern Time. Please be sure to refer to United Airlines Meeting ID number **560HM**.

T.F. Green Airport (PVD), is the closest airport and is located in Warwick, Rhode Island approximately 15 minutes from the Westin Providence Hotel, Rhode Island Convention Center, and the University housing at Vartan Gregorian Quadrangle and the Wriston Quadrangle.

TRAIN INFORMATION: For a complete schedule contact AMTRAK at: 1-800-872-7245. Travelers in Rhode Island should call: 401-727-7379 for a complete schedule. For an online schedule visit: <http://www.amtrak.com>. (See #6 on the downtown Providence map for location.)

BUS INFORMATION: Bonanza/Peter Pan Bus 401-751-8800. Busses coming from the South and East may request the driver to stop at the station in downtown Providence. (Bonanza/Peter Pan also offers service from Logan International Airport in Boston to Providence.) Online information is available at <http://www.bonanza.com>

DRIVING DIRECTIONS: From T. F. Green Airport (PVD) to Westin Providence Hotel, Vartan Gregorian Quadrangle at Brown University or the Rhode Island Convention Center.

To: Westin Hotel, Providence: From the airport grounds, take Interstate 95 North, Exit 22A. At the first set of lights take a right onto Francis Street, at the next set of lights take a right onto West Exchange Street. The hotel will be located on your right.

To: Vartan Gregorian Quadrangle at Brown University, Providence Rhode Island: From the airport grounds, take Interstate 95 North to Exit 20 (I-95: Cape Cod, East Providence). At the bottom of the ramp, turn left onto Wickenden Street. At second light, turn left onto Brook Street. At the first stop sign, turn left onto Power Street. At the first stop sign, turn right onto Thayer Street. The Quadrangle is on this block. Look for cast-iron gates on the right, just before the corner of Thayer and Charlesfield Streets. Once through the gates, enter the doors on your left.

To: Rhode Island Convention Center: Interstate 95 North to Exit 22A. Follow the signs towards Downtown/Convention Center. At the light, turn right onto Francis Street. At the next light, go right onto Sabin Street. Bear right between the hotel and the Convention Center to the North Garage. The RICC is located at One Sabin Street, Providence, RI 02903.

Please refer to <http://www.mapquest.com> for driving directions from other locations.

CAR RENTAL INFORMATION:

Avis is the official car rental company for MathFest 2004. When making your reservations you must use Avis Discount Number **B159265** for the discounted meeting rate. Rates are available from August 5, 2004 to August 21, 2004. Reservations can be made by telephone (800) 331-1600 or online at www.avis.com.

PUBLIC TRANSPORTATION: Rhode Island Public Transit Authority (RIPTA) 401-781-9400 or 1-800-244-0444. (See #5 on the downtown Providence map.)

Public Bus service from T.F. Green Airport in Warwick, RI to downtown Providence is available on either Bus #12, #20 or #66. The buses stop outside the airport terminal on the lower level where ground transportation is located. The fare is just \$1.25 to downtown, \$.10 more for a transfer to the rest of the state. For more information and schedules, visit <http://www.ripta.com>.

TAXI INFORMATION: Airport Taxi & Limousine Service —Offers hourly shuttle services to and from T.F. Green Airport for approximately \$9/person, one way. Tickets for the shuttle can be picked up at the airport shuttle counter located in the baggage claim area. There are regularly scheduled services between T. F. Green Airport and downtown Providence, area hotels, the train station, Brown University, and the Convention Center. Shuttles depart the airport for downtown Providence on the hour and arrive at The Westin Providence at quarter past the hour. Hours are 5 am to 11 pm and there is no service between 11 pm and 5 am. TELEPHONE: 401-737-2868.

These links are provided as a convenience:

Rhode Island Public Transit – Ferry service Providence to Newport
<http://www.ripta.com/schedules/ferry.php>

Newport Rhode, Island Visitor Center
<http://www.gonewport.com/contact/contact1.htm>

Providence, Rhode Island
<http://www.providenceri.com/>

Rhode Island Monthly Magazine
<http://www.rimonthly.com/restaurants/providence.html>





Boating in Narragansett Bay

Call for Contributed Paper Session Organizers

The MAA Committee on Sessions of Contributed Papers selects the topics and organizers for the contributed paper sessions held during the Joint Mathematics Meetings and MathFests. The Committee welcomes proposals from MAA members interested in organizing a contributed paper session or for topics for future contributed paper sessions.

Planning is now underway for MathFest 2005 to be held in Albuquerque, New Mexico, August 4-6, and for the 2006 Joint Mathematical Meetings to be held in San Antonio, Texas, January 12-15. The deadline for receipt of proposals for contributed paper sessions for the Albuquerque MathFest is October 12, 2004 and for the San Antonio Joint Mathematics Meeting is December 31, 2004.

Please send (preferably by email with an attached MS Word 2000 or WordPerct 11 file) the proposal title, name(s), mailing address(es), phone/fax number(s), and email address(es) of the organizer(s), and a one-page summary of the proposed contributed paper session to the Chair of the Committee, Sarah L. Mabrouk, Department of Mathematics, Framingham State College, 100 State Street, Framingham, MA 01701; Tel. (508) 626-4785; Fax (508) 626-4003; E-mail smabrouk@frc.mass.edu. If you have organized a contributed paper session in the past, please include information about this session (the year, the title of the session, and the meeting site) as well.



Program AT A GLANCE

MONDAY, AUGUST 9TH

11:00 am – 5:00 pm	Project NExT Registration
1:30 pm – 9:00 pm	Project NExT Workshop

9:00 am – 5:00 pm

Student Hospitality Center

9:30 am – 10:20 am

Invited Address
Hedrick Lecture Series
Ramanujan Graphs
Lecture 1: Expander Graphs
Peter Sarnak, Princeton University

10:30 am – 11:20 am

Invited Address
The Mystery of the Missing Tangents
Steven Sigur, The Paideia School, Atlanta

12:00 pm – 2:20 pm

Graduate Student Session
Workshop on Training T.A.s in Departments
and at Section Meetings
Diane Hermann, University of Chicago
David Manderscheid, University of Iowa

1:00 pm – 2:20 pm

Panels and Other Sessions
The Nuts and Bolts of Periodic Review
David Mazur, Western New England College
Kyle Riley, South Dakota School
of Mines & Technology

TUESDAY, AUGUST 10TH

8:00 am – 3:00 pm	Project NExT Registration
8:30 am – 5:25 pm	Project NExT Workshop
9:00 am – 5:00 pm	Extended Program Part 1: Two-Day Short Course Random Matrix Theory Alan Edelman, Massachusetts Institute of Technology

WEDNESDAY, AUGUST 11TH

8:00 am – 3:00 pm	Project NExT Registration
8:15 am – 5:45 pm	Project NExT Workshop
9:00 am – 5:00 pm	Board of Governor's Meeting
9:00 am – 5:00 pm	Extended Program Part 2: Two-Day Short Course Random Matrix Theory Alan Edelman, Massachusetts Institute of Technology
Noon – 7:00 pm	MathFest Registration
5:30 pm – 6:30 pm	MAA/PI MU EPSILON Student Reception
6:30 pm – 7:30 pm	Opening Reception
7:30 pm – 9:30 pm	Opening Banquet

1:00 pm – 2:20 pm

Panels and Other Sessions
Using the CUPM Curriculum Guide 2004:
Getting Grants to Facilitate Change
David Bressoud, Macalester College
Janet Anderson, Hope College

1:00 pm – 3:00 pm

Contributed Paper Session
Uses of the WWW that Enrich
and Promote Learning
Roger Nelson, Ball State University
Kirby Baker, UCLA

1:00 pm – 3:00 pm

Contributed Paper Session
Extracurricular Mathematics
Jeff Johannes and Melissa Sutherland,
SUNY Geneseo

1:00 pm – 3:00 pm

Invited Paper Session
Combinatorics
Doug Ensley and Cheryl Olson,
Shippensburg University

THURSDAY, AUGUST 12TH

8:00 am – 4:00 pm	MathFest Registration
8:30 am – 9:20 am	MAA Invited Address Pebbling Results by Undergraduate Researchers Aparna Higgins, University of Dayton
9:00 am – 5:00 pm	Exhibits and Book Sales
9:00 am – 5:00 pm	Email Lab

1:00 pm – 3:00 pm

Minicourse #1: Part 1
A Dynamical Systems Approach to the
Differential Equations Course
Paul Blanchard, Boston University

1:00 pm – 3:00 pm

Minicourse #2: Part 1
Graphs for Modeling Large Structures
and Rigid Structures
Jack Graver, Syracuse University

1:00 pm – 5:00 pm

General Contributed Paper Session

THURSDAY, AUGUST 12TH continued

1:00 pm – 5:00 pm	Project NExT
1:00 pm – 5:00 pm	MAA Student Paper Sessions
1:00 pm – 5:00 pm	PME Student Paper Sessions
2:30 pm – 3:50 pm	Graduate Student Session Getting Your Thesis Ready for Publication Sol Freiberg, Boston College Donna Flint, South Dakota State University
3:15 pm – 5:15 pm	Contributed Paper Session Innovative Approaches in Mathematics Education Carol Vorbach, University of Houston, Downtown
3:15 pm – 5:15 pm	Contributed Paper Session Putting Some Analysis into Introductory Real Analysis Richard J. Maher, Loyola University, Chicago
3:15 pm – 5:15 pm	Invited Paper Session Geometric Group Theory Philip Hotchkiss, Westfield State College John Meier, Lafayette College
3:15 pm – 5:15 pm	Minicourse #3: Part 1 Bridging the Gap Between Mathematics and the Physical Sciences Tevian Dray, Oregon State University
3:15 pm – 5:15 pm	Minicourse #4: Part 1 PMET-Preparing Mathematicians to Educate Teachers: Grades K-5 David C. Royster, University of North Carolina at Charlotte Olaf Stackelberg, Kent State University
4:00 pm – 5:20 pm	Graduate Student Session Choosing the Right Job for You Christopher Simons, Rowan University Will Dickinson, Grand Valley State University
5:00 pm – 5:50 pm	MAA Mathematical Contest in Modeling (MCM) Winners Ben Fusaro, Florida State University
5:30 pm – 6:30 pm	Graduate Student Reception
6:00 pm – 10:00 pm	New England Dinner and Sock Hop Dance

FRIDAY, AUGUST 13TH

8:00 am – 4:00 pm	MathFest Registration
8:30 am – 9:20 am	MAA–NAM DAVID BLACKWELL Lecture Mathematical Predictions and Aneurysm Treatment Dawn Alisha Lott, Delaware State University
9:00 am – 5:00 pm	Exhibits and Book Sales
9:00 am – 5:00 pm	Email Lab
9:00 am – 5:00 pm	Student Hospitality Center
9:30 am – 10:20 am	Invited Addresses Hedrick Lecture Series Lecture 2: Ramanujan's Conjecture Paul Sarnak, Princeton University
10:30 am – 11:20 am	Invited Address James R.C. Leitzel Lecture Mathematics and the Schools Alan Schoenfeld, University of California, Berkeley
11:30 am – Noon	MAA Prize Session
1:00 pm – 2:20 pm	Panels and Other Sessions SUMMA Special Session on NREUP Bill Hawkins, MAA and the University of the District of Columbia Bob Megginson, MSRI and the University of Michigan
1:00 pm – 2:20 pm	Graduate Student Session Preparing Your Resume Katherine Socha, Michigan State University
1:00 pm – 2:20 pm	Panels and Other Sessions Using the CUPM Curriculum Guide 2004 to Facilitate Change David Bressoud, Macalester College Amy Cohen, Rutgers University
1:00 pm – 3:00 pm	MAA Contributed Paper Session Uses of the WWW that Enrich and Promote Learning Roger Nelson, Ball State University Marcelle Bessman, Jacksonville University Kirby Baker, UCLA
1:00 pm – 3:00 pm	MAA Contributed Paper Session Model Lessons from First-Year Calculus Donna Beers, Simmons College

1:00 pm– 3:00 pm	Minicourse #1: Part 2 A Dynamical Systems Approach to the Differential Equations Course Paul Blanchard, Boston University	3:15 pm – 5:15 pm	Minicourse# 6: Part 1 Fair Enough? Mathematics of Equity John C. Maceli and Stanley E. Seltzer, Ithaca College
1:00 pm – 3:00 pm	Minicourse #2: Part 2 Graphs for Modeling Large Structures and Rigid Structures Jack Graver, Syracuse University	6:00 pm – 7:45 pm	PME Banquet See the MathFest Registration Form for ticket information.
1:00 pm – 4:00 pm	Panels and Other Sessions Mathematical Modeling in AP Calculus Daniel J. Teague, The North Carolina School of Science and Mathematics	8:00 pm – 9:00 pm	Invited Address PME/J. Sutherland Frame Lecture When Five Colors Suffice Joan P. Hutchinson, Macalester College
1:00 pm – 5:00 pm	General Contributed Paper Session	9:00 pm – 11:00 pm	AWM RECEPTION

SATURDAY, AUGUST 14TH

1:00 pm – 5:00 pm	MAA Student Paper Sessions	8:00 am – 2:00 pm	MathFest Registration
1:00 pm – 5:00 pm	PME Student Paper Sessions	8:30 am – 9:20 am	Invited Address AWM-MAA Lecture Mathematics Education of Tomorrow Bozenna Pasik-Duncan, University of Kansas
1:00 pm – 5:00 pm	Project NExT	9:00 am – 1:00 pm	Exhibits and Book Sales
2:30 pm – 3:50 pm	Panels and Other Sessions SIGMAA on the Philosophy of Mathematics Business Meeting and Invited Address Roger Simons, Rhode Island College	9:00 am – 1:00 pm	Student Hospitality Center
2:30 pm – 3:50 pm	Graduate Student Session Tips on Interviewing Dave Mazur, Western New England College	9:30 am – 10:20 am	Hedrick Lecture Series Ramanujan Graphs Lecture 3: Ramanujan's Conjecture Peter Sarnak, Princeton University
2:30 pm – 4:30 pm	Invited Paper Session Applications of Topology Colin Adams, Williams College	10:30 am – 11:20 am	MAA Invited Address How Computer Graphics Are Changing Hollywood Tony DeRose, Pixar Animation Studios
3:00 pm – 4:30 pm	Exhibit Hall Reception	11:30 am – Noon	MAA Business Meeting
3:15 pm – 5:15 pm	MAA Contributed Paper Session Getting Students to Explore Concepts Through Writing in Mathematics Sarah L. Mabrouk, Framingham State College	1:00 pm – 2:20 pm	Graduate Student Session Negotiating With the Dean Kimber Tysdal, Hood College Jacqueline Jensen, Sam Houston State University
3:15 pm – 5:15 pm	MAA Contributed Paper Session Advances in Recreational Mathematics Charles Ashbacher, Charles Ashbacher Technologies	1:00 pm – 2:20 pm	Panels and Other Sessions MAA/RUME Panel Discussion on the ICME-10 Meeting Annie Selden, Tennessee Technological University Martha Siegel, Towson University
3:15 pm – 5:15 pm	Minicourse# 5: Part 1 Making Liberal Arts Mathematics the Most Important Course Students Take to Learn Effective Thinking Edward B. Burger, Williams College Michael Starbird, University of Texas at Austin	1:00 pm – 2:20 pm	Panels and Other Sessions When Are Two Teachers Better Than One? Janet Anderson, Hope College Stephanie Fitchett, Florida Atlantic

SATURDAY, AUGUST 14TH continued

1:00 pm – 2:50 pm	MAA Student Workshop Topics in Fractal Geometry Benoit Mandelbrot	3:00 pm – 3:50 pm	MAA Student Lecture The Secret of Brunelleschi's Cupola Mario Martelli, Claremont-McKenna College
1:00 pm – 3:00 pm	Panels and Other Sessions Introduction to Webwork A Web Based Homework System Michael G. Gace, Arnold K. Pitzer, and Vicki Roth, University of Rochester	3:15 pm – 5:15 pm	Contributed Paper Session Cooperative Projects Between the Mathematical Sciences and the Life Sciences Catherine M. Murphy, Purdue University Calumet Bill Marion, Valparaiso University
1:00 pm – 3:00 pm	Contributed Paper Session Mathematical Modeling Modules and Materials Kyle L. Riley, South Dakota School of Mines and Technology Laurie J. Heyer, Davidson College	3:15 pm – 5:15 pm	Contributed Paper Session Theory and Applications of Graph Theory Howard L. Penn, Carol G. Crawford, and T.S. Michael, United States Naval Academy
1:00 pm – 3:00 pm	Contributed Paper Session Strategies for Teaching Multiple Audiences in One Class Carl Lienert, Fort Lewis College Christopher Goff, University of the Pacific	3:15 pm – 5:15 pm	Minicourse #5: Part 2 Making Liberal Arts Mathematics the Most Important Course Students Take to Learn Effective Thinking Edward B. Burger, Williams College Michael Starbird, University of Texas at Austin
1:00 pm – 3:00 pm	Minicourse #3: Part 2 Bridging the Gap Between Mathematics and the Physical Sciences Tevian Dray, Oregon State University	3:15 pm – 5:15 pm	Minicourse# 6: Part 2 Fair Enough? Mathematics of Equity John C. Maceli and Stanley E. Seltzer, Ithaca College
1:00 pm – 3:00 pm	Minicourse #4: Part 2 PMET-Preparing Mathematicians to Educate Teachers: Grades K-5 David C. Royster, University of North Carolina at Charlotte Olaf Stackelberg, Kent State University	4:00 pm – 4:30 pm	Math Horizons Special Student Session Arthur T. Benjamin, Harvey Mudd College Jennifer J. Quinn, Occidental College
1:00 pm – 3:30 pm	Panels and Other Sessions "Small" Mathematics Frank Morgan, Williams College	4:00 pm – 5:00 pm	MAA Dramatic Lecture: Isaac Newton H.W. Straley, Charlene B. Straley and F.A. Chip Straley
1:00 pm – 4:00 pm	Panels and Other Sessions AP Calculus Workshop: The Fundamental Theorem of Calculus and Infinite Series David Bressoud, Macalester College Ben Klein, Davidson College	4:45 pm – 5:45 pm	Student Problem Solving Competition Richard Neal, University of Oklahoma
1:00 pm – 5:00 pm	General Contributed Paper Session	6:00 pm – 9:30 pm	MAA Silver and Gold Banquet Emcee, James Tattersall Speaker, Thomas Banchoff
2:30 pm – 3:50 pm	Graduate Student Session The First Year Experience as a Faculty Member Carol Bell, SUNY-Cortland Julie Jones, Huntsville, TX		
2:30 pm – 3:50 pm	Panels and Other Sessions Actuarial Education Richard London, University of Connecticut		

Student Program AT A GLANCE

Wednesday, August 11th

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

2:30 pm – 3:50 pm

Tips on Interviewing
Dave Mazur,
Western New England College

6:00 pm – 7:45 pm

PME Banquet
See the MathFest Registration Form
for ticket information.

8:00 pm – 9:00 pm

Invited Address
PME/J. Sutherland Frame Lecture

Thursday, August 12th

8:30 am – 9:20 am **MAA Invited Address**
Pebbling Results by
Undergraduate Researchers
Aparna Higgins, University of Dayton

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

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

Noon – 2:20 pm **Workshop on Training T.A.s
in Departments and at
Section Meetings**
Diane Hermann, University of Chicago
David Manderscheid, University of Iowa

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

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

2:30 pm – 3:50 pm **Getting Your Thesis Ready
for Publication**
Sol Friederg, Boston College
Donna Flint, South Dakota
State University

4:00 pm – 5:20 pm **Choosing the Right Job for You**
Christopher Simons, Rowan University
Will Dickinson, Grand Valley
State University

5:00 pm – 5:50 pm **MAA Mathematical Contest in Modeling
(MCM) Winners**

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

9:00 am – 1:00 pm

Exhibits and Book Sales

9:00 am – 1:00 pm

Student Hospitality Center

1:00 pm – 2:20 pm

Negotiating With the Dean
Kimber Tysdal, Hood College
Jacqueline Jensen,
Sam Houston State University

1:00 pm – 2:50 pm

MAA Student Workshop
Topics in Fractal Geometry
Benoit Mandelbrot

2:30 pm – 3:50 pm

**The First Year Experience
as a Faculty Member**
Carol Bell, SUNY-Cortland
Julie Jones, Huntsville, TX

3:00 pm – 3:50 pm

MAA Student Lecture
The Secret of Brunelleschi's Cupola
Mario Martelli, Claremont McKenna College

4:00 pm – 4:30 pm

Math Horizons Special Student Session

4:45 pm – 5:45 pm

Student Problem Solving Competition

Saturday, August 14th

Friday, August 13th

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

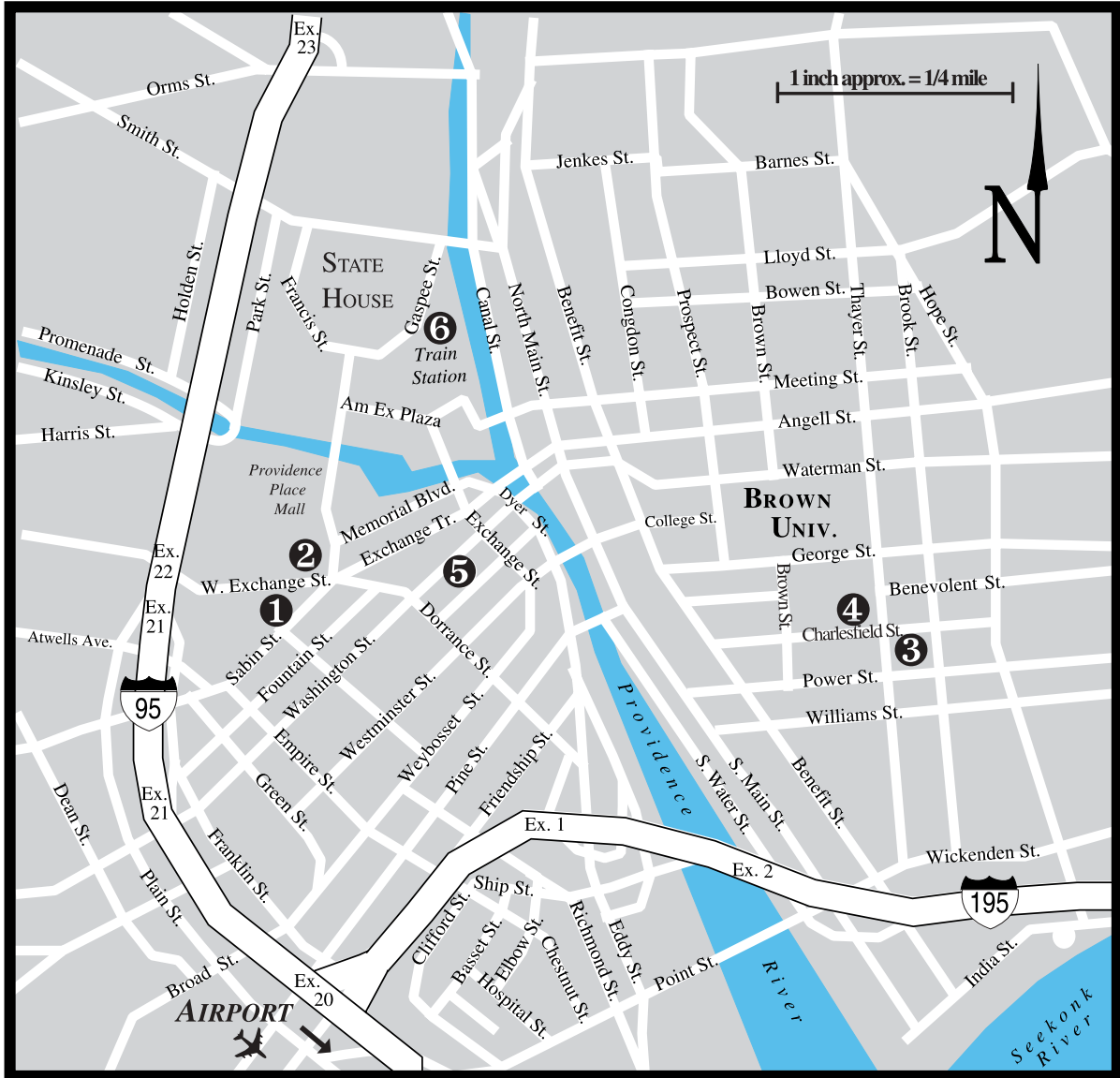
9:00 am – 5:00 pm **Student Hospitality Center**

1:00 pm – 2:20 pm **Preparing Your Resume**
Katherine Socha,
Michigan State University

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

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

Downtown Providence



- ① R. I. Convention Center
- ② Providence Westin Hotel
- ③ Vartan Gregorian Quadrangle, Brown University
- ④ Wriston Quadrangle, Brown University
- ⑤ RIPTA Station/Kennedy Plaza
- ⑥ Train Station



MASSACHUSETTS

WILLIAMS COLLEGE

The Williams College Department of Mathematics and Statistics invites applications for a newly authorized full-time visiting position in mathematics for the 2004-2005 year, at the rank of assistant professor; in exceptional cases, however, more advanced appointments may be considered. Ph.D. required. Send vita and three letters of recommendation on teaching and research to: Visitor Hiring Committee, Department of Mathematics and Statistics, Williams College, Williamstown, MA 01267. Consideration of applications will begin immediately and continue until the position is filled. As an AA/EOE employer, Williams especially welcomes applications from women and minority candidates.

OHIO

KENT STATE UNIVERSITY-STARK CAMPUS

Kent State University-Stark Campus Position: Assistant Professor [No. 652041KSW] Teaching, Leadership & Curriculum Studies-Stark Campus, Canton, OH Application Deadline: February 3, 2004, until filled. Salary Range: \$40,000

Characteristic Job Duties: Full-time, nine-month, tenure-track position beginning Fall 2004, teaching mathematics methods and other general methods/curriculum courses appropriate for pre-service teachers of grades 4-9; engaging in related scholarship; academic advising; and integrating field experiences into course curricula.

Qualifications: Ph.D. in Curriculum and Instruction (with emphasis in Mathematics Education) required. Appropriate teaching certificate or license with two-plus years experience in teaching mathematics in grades 4-9; a commitment to middle level philosophy, multicultural education, and interdisciplinary teaching required. Ability/interest in using technology in the classroom, and a willingness to engage in university-school partnerships that could include participation in current or future grant-based initiatives required. Demonstrated dedication to teaching undergraduates and evidence of effective teaching, research and scholarly agenda required.

Contact Information: TLCS/Math Education Search Kent State University Stark Campus 6000 Frank Avenue N.W. Canton, OH 44720. Email: humanresources@stark.kent.edu Web Site: <http://www.stark.kent.edu> How To Apply: To apply, please submit a letter of application referring to the above position title and number, curriculum vitae, transcripts, and three (3) letters of reference to contact address.

PENNSYLVANIA

UNIVERSITY OF PITTSBURGH AT BRADFORD

Tenure-track assistant professor position, Fall 2004. Required: Ph.D. in mathematics, advanced degree in information science, two years' undergraduate teaching experience. A strong commitment to undergraduate teaching and research on a small rural campus and potential in scholarly work are essential. Salary commensurate with qualifications and experience. Send application letter, vita, official transcripts and 3 letters of recommendation to: Chair, Math Search, University of Pittsburgh at Bradford, 300 Campus Drive, Bradford, PA 16701. Application deadline: (will be 30 days after ad is published). Women and minorities are encouraged to apply. AA/EOE.

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2003 Annual Survey of the Mathematical Sciences

The first report of the *2003 Annual Survey of the Mathematical Sciences* has just been released and is available online at <http://www.maa.org/news/2003survey.html>. It focuses on new doctoral recipients and the faculty salary survey. The second report will be published in August, 2004.