FOCUS

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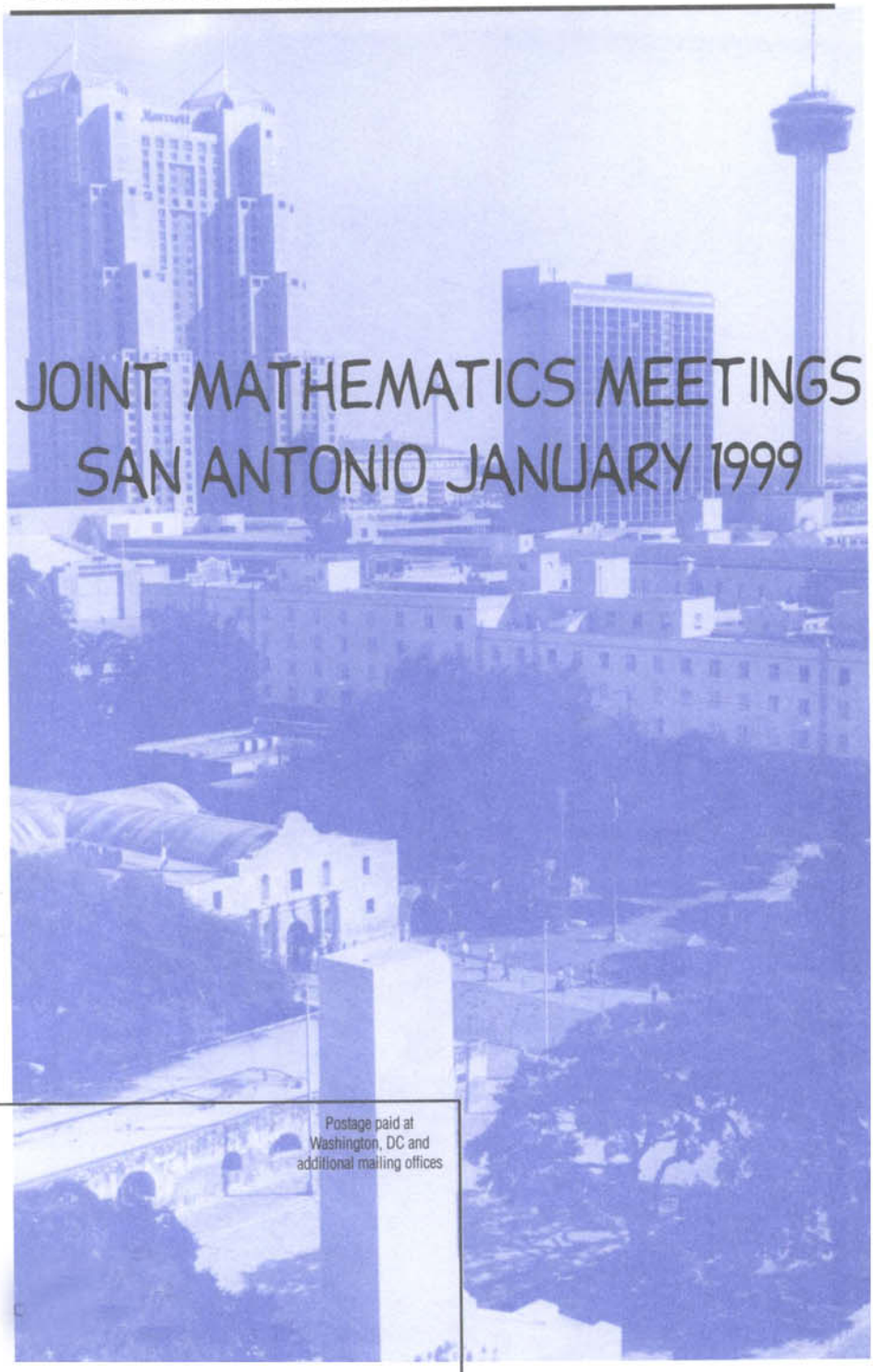

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Editor: Harry Waldman, MAA; hwaldman@maa.org

Managing Editor: Carol Baxter, MAA cbaxter@maa.org

Advertising Coordinator: Joseph Watson, MAA; jwatson@maa.org

President: Gerald L. Alexanderson, Santa Clara University

First Vice-President: Anita Solow, Randolph-Macon Woman's College

Second Vice-President: Ed Dubinsky, Georgia State University

Secretary: Martha Siegel, Towson University

Treasurer: Gerald J. Porter, University of Pennsylvania

Executive Director: Marcia P. Sward

Associate Executive Director and Director of Publications and Electronic Services: Donald J. Albers

Letters to the editor should be addressed to Harry Waldman, MAA, 1529 Eighteenth Street, NW, Washington, DC 20036.

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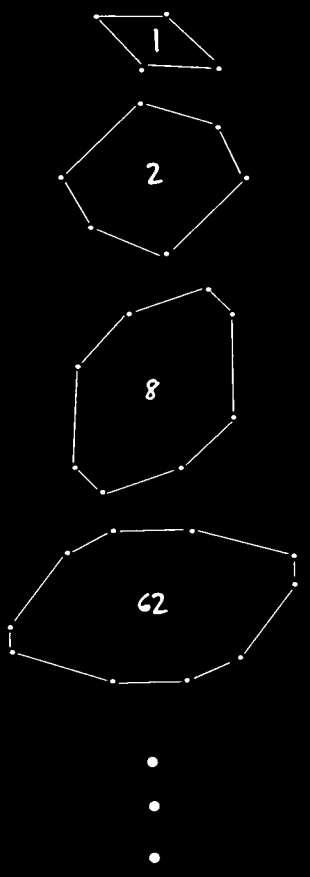
Intrigued?



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The Art of Mathematics Comes Alive

at the Joint Mathematics Meetings in San Antonio, January 13-16.

Join your colleagues for fresh insights and intriguing applications at the largest professional mathematics gathering of the year.

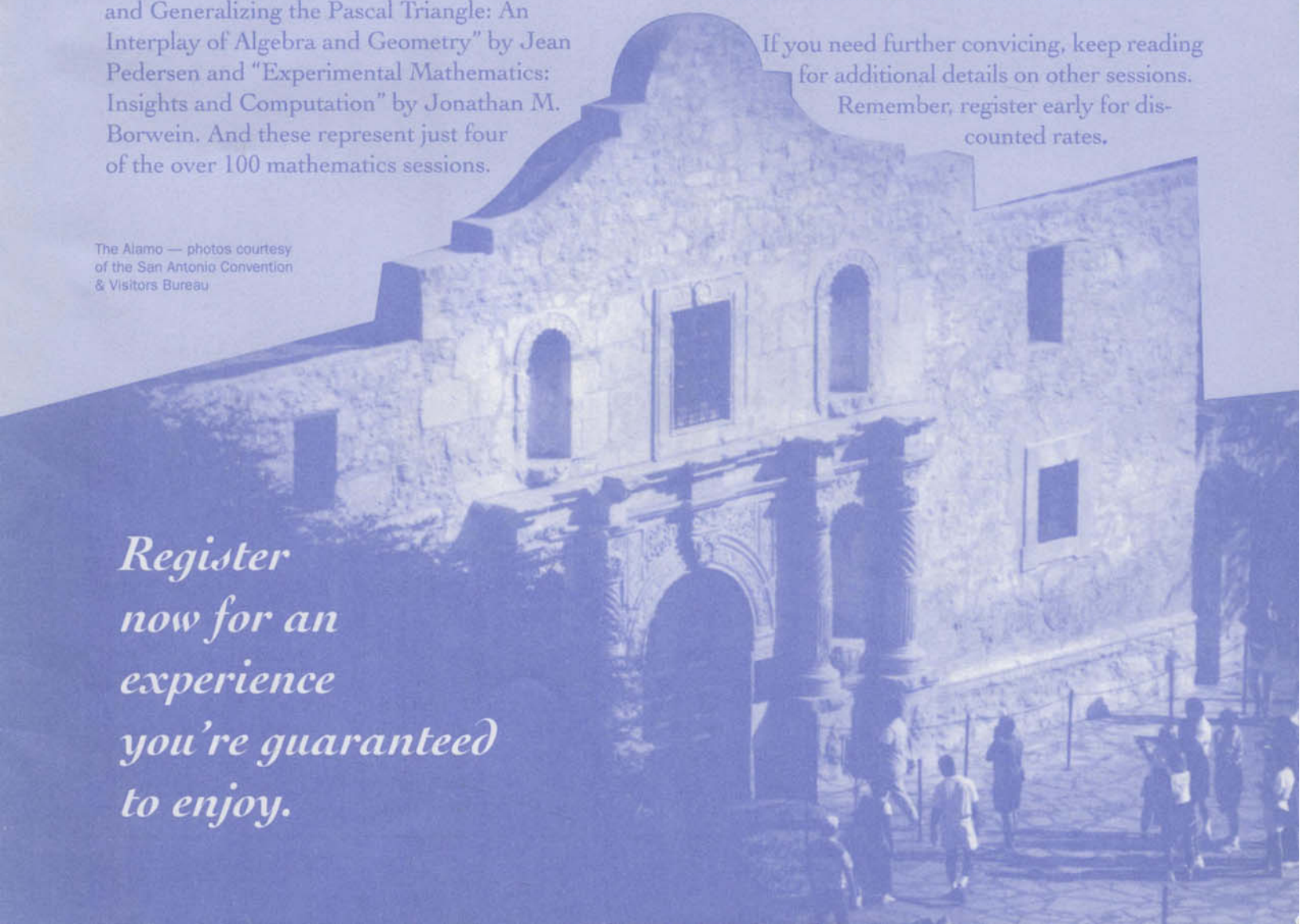
Catch a lecture by John H. Conway, creator of "The Game of Life," titled the "Symmetries of Things: Real and Conceptual." Or learn about the sophisticated uses of mathematics by the modern financial industry at the MAA Short Course, "Mathematics in Finance." Other sessions include "Extending and Generalizing the Pascal Triangle: An Interplay of Algebra and Geometry" by Jean Pedersen and "Experimental Mathematics: Insights and Computation" by Jonathan M. Borwein. And these represent just four of the over 100 mathematics sessions.

TALK ABOUT SPEAKERS! This meeting will feature some of the best. Nancy Kopell, Boston University, will give the AMS Gibbs Lecture, "We Got Rhythm: Dynamical Systems of the Nervous System." And we'll have Jennifer Tour Chayes, Microsoft; Joan Feigenbaum, AT&T Labs, and John Fauvel, The Open University, just three more of the many distinguished speakers.

Mathematics and the Arts are interwoven throughout the program. "Music and Mathematics," a MAA Minicourse, explores the applications of number theory, probability, and group theory to musical topics. The MAA Contributed Paper Session, "Ethical, Humanistic, and Artistic Mathematics," and the MAA Student Lecture, "Pianos and Continued Fractions," by Edward G. Dunne merge mathematics and the arts. And accept this invitation to several cultural events: a poetry reading, "Eine Kleine (Mathematische) Nachtmusik," and a dramatic presentation of "The Mathematics of Lewis Carroll."

If you need further convicing, keep reading for additional details on other sessions. Remember, register early for discounted rates.

The Alamo — photos courtesy of the San Antonio Convention & Visitors Bureau



Register now for an experience you're guaranteed to enjoy.

Invited Addresses

MAA INVITED ADDRESSES

Jean Pedersen,
Santa Clara University
Extending and Generalizing the Pascal Triangle: An Interplay of Algebra and Geometry
Wednesday, 2:15 p.m.-3:05 p.m.

John H. Conway,
Princeton University
The Symmetries of Things: Real and Conceptual
Wednesday, 3:20 p.m.-4:10 p.m.

John Fauvel,
The Open University
The History of Mathematics and its Future
Thursday, 10:05 a.m-10:55 a.m.

Jeremy Kilpatrick,
University of Georgia
The Role of Research in Improving School Mathematics
Friday, 2:15 p.m.-3:05 p.m.

Edward G. Dunne,
American Mathematical Society
Pianos and Continued Fractions
Friday, 7:30 p.m.-8:20 p.m.
(Student Lecture)

Rodica E. Simion,
George Washington University
Convex Polytopes and Partially Ordered Sets
Saturday, 9:00 a.m.-9:50 a.m.

Jonathan M. Borwein,
Simon Fraser University
Experimental Mathematics: Insight from Computation
Saturday, 10:05 a.m.-10:55 a.m.

register online at www.maa.org

AMS-MAA INVITED ADDRESSES

Jennifer Tour Chayes,
Microsoft
Title TBA
Wednesday, 11:10 a.m.-12:00 noon

Joan Feigenbaum,
AT&T Labs
Massive Graphs: Algorithms, Applications, and Open Problems
Friday, 11:10 a.m.-12:00 noon

AMS INVITED ADDRESSES

AMS COLLOQUIUM LECTURES

Helmut Hofer,
New York University-Courant Institute
Symplectic Geometry from a Dynamical Systems Point of View
Wednesday, Thursday and Friday, 1:00 p.m.-2:00 p.m.

AMS JOSIAH WILLARD GIBBS LECTURE

Nancy J. Kopell,
Boston University
We Got Rhythm: Dynamical Systems of the Nervous System
Wednesday, 8:30 p.m. -9:30 p.m.

Chuu-Lian Terng,
Northeastern University
Geometry of Soliton Equations,
Wednesday, 10:05 a.m.-10:55 a.m.

Alan D. Weinstein,
University of California-Berkeley
Midpoints
Thursday, 3:20 p.m.-4:10 p.m.

Sorin Popa,
University of California Los Angeles
Title TBA
Friday, 9:00 a.m.-9:50 a.m.

Rita Colwell,
National Science Foundation
Title TBA
Friday, 4:20 p.m.-5:10 p.m.

Andrea L. Bertozzi,
Duke University
Undercompressive Shocks in Thin Film Flow
Saturday, 2:15 p.m.-3:05 p.m.

MAA Sessions

The Use of History in the Teaching of Mathematics organized by Florence Fasanelli, College-University Resource Institute, and V. Frederick Rickey, U.S. Military Academy. An NSF-supported MAA Institute on the History of Mathematics and its Use in Teaching which began with the first summer session in 1995 deals with the history of mathematics, how it can be used in the classroom, and how to teach history of mathematics courses. This session invites contributions from individuals who have taught history of mathematics in innovative ways or who have used history in their classes to support current changes in curricula, pedagogy, and the mathematical preparation of teachers. Speakers include Robin Wilson, The Open University; Ed Sandifer, Western Connecticut State University; V. Frederick Rickey, U.S. Military Academy; Victor J. Katz, University of the District of Columbia; and Shirley B. Gray, California State University, Los Angeles. Wednesday, 8:00 a.m.- 10:55 a.m.

Deans' Views of Mathematics Departments organized by Bernard L. Madison, University of Arkansas, and David J. Lutzer, College of William and Mary. A panel of (non-mathematician) deans will discuss how mathematics departments are perceived at their institutions. The aim is to investigate how the cultures of mathematics faculties are interacting with shifting priorities in colleges and universities. Declining enrollments, changes in engineering accreditation criteria, and reports of program reductions have raised new concerns and rekindled old ones about the future of the profession. This future will be affected by decisions of college deans. The panel is sponsored by the MAA Committee on the Profession. Bernard L. Madison, Dean, Fulbright College of Arts and Sciences, University of Arkansas will serve as moderator. Panelists include Sheryl Smith-Kappus, Dean, Mathematics and Natural Sciences, Collin County Community College District, McKinney, Texas; Mary Ann Rankin, Dean, College of Natural Sciences, University of Texas at Austin; and Jane L. Winer, Dean, College of Arts and Sciences, Texas Tech University. Wednesday, 8:00 a.m.-9:20 a.m.

"A Day in Old Mexico" at the Charro Ranch —
Photos courtesy of the San Antonio Convention & Visitors Bureau

The Mathematics of Lewis Carroll performed by Robin Wilson, The Open University, and friends. This dramatic presentation will contain episodes from the life of Lewis Carroll, with particular reference to his mathematics (both serious and otherwise) gleaned from his texts, mathematical puzzles, the "Alice" books, and university pamphlets. In particular, material relating to his views on algebra, logic, geometry, and his attitudes toward teaching will be presented. Wednesday, 7:00 p.m.- 8:00 p.m.

Summer Research Opportunities for Faculty in Industry and Government organized by Joseph A. Gallian, University of Minnesota-Duluth. Summer positions in government and industry provide faculty with unique opportunities for professional development. Such positions permit faculty to participate in research that has "real world" applications and also provide an enhanced perspective on the teaching of mathematics. Panelists will discuss their own experiences with such positions, including how they found these positions, their advantages and disadvantages, and their impact on both the faculty member and her or his collaborators in government or industry. Included among the panelists are M. Leigh Lunsford of Alabama A&M University and William Velez of the University of Arizona. The panel will be moderated by Joseph A. Gallian. Sponsored by Project NExT. Thursday, 8:00 a.m.-9:30 a.m.

Outreach Programs for Women and Girls in Mathematics organized by Kathleen A. Sullivan, Seattle University. Advocacy programs for women and girls in mathematics will be showcased at this poster session. Mathematicians with programs which target women and girls are urged to submit an application, preferably by e-mail, to Kathleen Sullivan (ksulliva@seattleu.edu). The application should include the title, name, and address of the applicant, an e-mail address if available, and a one-page description of the project. Applications should be submitted by October 1. Space is limited, and there is no guarantee that all submissions can be accommodated. Applicants will be notified in November whether or not their proposals have been accepted. The poster session is sponsored by MAA Women in Mathematics Network. Thursday, 8:00 a.m.-10:00 a.m.

Involving Undergraduate Students in Industrial Consulting Experiences organized by Mary R. Parker, Austin Community College, and Dexter C. Whittinghill, Rowan University. Well designed experiences in industrial consulting provide undergraduate students, even freshmen, with an opportunity to deal with meaningful problems and sample the field for potential careers. The panel will discuss the values of such experiences to students, industry, and faculty. The panel is sponsored by the ASA-MAA Committee on Statistics. Panelists include Donald L. Bentley, Pomona College; Cary Marcot, CardioGenesis Corporation; and Julie Buring, Harvard University. Thursday, 2:15 p.m.-3:45 p.m.,

Exemplary Women in Mathematical Careers organized by Carolyn C. Connell, Westminster College. In what ways does one's gender affect pursuit of a career in mathematics? Women at various stages in their mathematical careers will offer some insights. The panel is sponsored by the MAA Committee on the Participation of Women. Thursday, 2:15 p.m.-3:45 p.m.,

Using the Web as a Tool for Teaching Calculus: What We've Learned; Successes and Problem Areas organized by Lawrence S. Husch, University of Tennessee at Knoxville; Earl D. Fife, Calvin College; and Eugene A. Klotz, Swarthmore College. Recent Joint Mathematics Meetings have presented sessions featuring uses of the World Wide Web in mathematical instruction. These sessions have included a panel discussion, minicourses, and a contributed paper session. As software packages improve and more faculty have access to high speed internet connections, uses of the Web for mathematics instruction have proliferated. Some of these experiences have been highly successful and others leave both faculty and students with a feeling of disappointment. The time has come for retrospection. This panel discussion will focus on past experiences and what important lessons have been learned from these experiences. The panel is sponsored by the MAA Committee on Computers in Mathematics Education (CCIME). Thursday, 2:15 p.m.-3:45 p.m.

McNay Art Museum — Photos courtesy of the San Antonio Convention & Visitors Bureau

Discovery-Based Teaching of Undergraduate Mathematics Courses organized by William T. Mahavier, Nichols State University; and James P. Ochoa, Hardin-Simmons University. The purpose of this session is to present ideas for teaching undergraduate mathematics courses using discovery-based methods modeled after the Moore (Texas) Method. Professors who have taught courses using these methods will discuss their theorem sequences, experiences, and insights concerning this style of teaching. William T. Mahavier and James P. Ochoa will serve as moderators and compile a proceedings for this session. Panelists include Stuart J. Anderson, Texas A&M at Commerce; Steve Armentrout, Pennsylvania State University; Mary Ellen Rudin, University of Wisconsin, Madison; Jerome Dancis, University of Maryland, College Park; and Tom Ingram, University of Missouri at Rolla. Contributions are welcome. Thursday, 2:15 p.m.-3:45 p.m.

College Algebra Reform organized by Donald B. Small, U.S. Military Academy. The panelists will discuss their experience in developing and teaching reformed college algebra courses in terms of content, pedagogy, and the use of technology. Reform efforts are addressing the fact that in many schools college Algebra has evolved into a "barrier" course rather than a "pump" course. In several schools, college algebra is required by all majors and, in addition, enrolls more students than all other mathematics courses combined. Sponsored by the CUPM Subcommittee on Calculus Reform and the First Two Years. Panelists include Sandi Athanassiou, University of Missouri-Columbia; General G. Marshall, Huston-Tillotson College; Kathleen Heid, Pennsylvania State University; and Philip Quartararo, Southern University. Thursday, 2:15 p.m.-3:45 p.m.

Using the Web in Teaching Undergraduate Mathematics organized by V. S. Ramamurthi, University of North Florida, and Rebecca E. Hill, Rochester Institute of Technology. This poster session provides an opportunity for educators to share their experiences with instructional uses of the web with other interested educators. Some instructional materials can be described with actual posters while others might be better shared by presenting the web site on a laptop computer. Actual Internet access is not needed for this session. An educator's web site can be presented locally on a laptop. Software such as Web Whacker even allows one to download links to other sites and present this on a laptop. The session is sponsored by the MAA Committee on Computers in Mathematics Education. Applications should be submitted to V. S. Ramamurthi (ramm@osprey.unf.edu) or Rebecca E. Hill (rehsma@rit.edu) by October 1. Thursday, 2:15 p.m.-4:10 p.m.

Innovations in Mathematics Programs Which Benefit Future Teachers organized by Marjorie Enneking, Portland State University. This poster session will provide an opportunity for faculty from community colleges, colleges, universities, and collaboratives of institutions to share their innovations in courses and programs which are designed to benefit students in the courses who plan to become elementary, middle school, or high school teachers. In addition to courses, the session will showcase programs which incorporate diversity, advising, undergraduate research, undergraduate peer teaching experiences, use of technology, or other components which provide exemplary support for future teachers. Applications should be submitted to Marj Enneking (marj@mth.pdx. edu) by October 1. The application should include name, address, phone number, email address, and a one-page description of the project. Space is limited and there is no guarantee that all submissions can be accommodated. Applicants will be notified in November whether or not their proposals have been accepted. Sponsored by the MAA Committee on the Mathematical Education of Teachers (COMET). Thursday, 6:00 p.m.-8:00 p.m.

Solving the Two Body Problem organized by Philip E. Gustafson, Mesa State College, and Gregory P. Dresden, Washington and Lee University. This panel focuses on issues of concern to couples, at least one of whom is a career academician. Panelists will give a brief discussion on some of the relevant issues. Audience participation will be encouraged. Gregory P. Dresden will serve as moderator. Panelists include Jean E. Taylor, Rutgers University; Elizabeth G. Yanik, Emporia State University; and Albert W. Schueller, Whitman College. Co-sponsored by the MAA and the Young Mathematicians Network. Thursday 7:00 p.m.-8:30 p.m.

Research on Undergraduate Mathematics Education organized by Thomas P. Dick, Oregon State University. The Association for Research on Undergraduate Mathematics Education (ARUME) is being formed for mathematics educators and professional mathematicians interested in research on undergraduate mathematics education. On Thursday evening this group will host a welcoming address, business meeting, election of officers, and several presentations exemplifying research on undergraduate mathematics, followed by a reception. Thursday, 7:00 p.m.-9:00 p.m. More presentations will be made on Friday, 7:00 p.m.-9:00 p.m.

Eine Kleine (Mathematische) Nachtmusik presented by Erich Neuwirth, University of Vienna. Mathematical principles of musical tuning systems will be demonstrated beginning with simple frequency ratios for musical intervals known to the Greeks. Pythagorean, Mean Tone, and Well Tempered scales with accompanying melodies and chords will be constructed on the piano. A few different pieces will be performed by well-known composers to show the connection between the mathematical and physical aspects of the problem. How much the musical expression of a piece of music changes when played in different tunings will be demonstrated. Thursday, 7:30 p.m.-9:00 p.m.

Student Reports: Explorations in Using the World Wide Web to Enhance the Teaching of Mathematics organized by Donald B. Small, U.S. Military Academy. Teams of students will report on their research that was initiated at the "Explorations in Using the World Wide Web to Enhance the Teaching of Mathematics" workshop held at Carroll College, May 1998. Each team is to complete an undergraduate thesis or capstone project or the equivalent during the 1998-99 academic year based on research stemming from the Carroll workshop. Teams involved in the workshop are from Simmons College, Texas Southern University, Prairie View A&M University, University of Texas at San Antonio, Missouri Western State College, University of Redlands, Oregon State University, Dull Knife Memorial Community College, Stone Child Community College, and Little Big Horn Community College. Thursday, 7:30 p.m.- 9:00 p.m.

Innovations in Teaching Assistant Training organized by Teri Jo Murphy, University of Oklahoma, and Suzanne M. Lenhart, University of Tennessee. This session will showcase a variety of new and on-going teaching assistant development programs that address the evolving role of the teaching assistant in reform courses. These training programs provide support and guidance to teaching assistants and the future professoriate who are adjusting to new technologies, content, and instructional strategies. The panel is sponsored by the AMS-MAA Committee on Teaching Assistants and Part-Time Instructors. Panelists include Patricia Shure, University of Michigan; James Epperson, Texas Tech University; Ethel Wheland, University of Akron; and Iris B. Fetta, Clemson University. Friday, 8:00 a.m.-10:50 a.m.

Dual Credit For Mathematics Courses Taken In High School organized by Mary Robinson, University of New Mexico-Valencia Campus Branch. Programs have been established in many places which allow high school students to take college-content mathematics courses to earn credit at both the high school and the college. Two- and four-year institutions each are involved in these arrangements. Such dual credit plans seem to be growing in number nationwide and can include courses taught on the high school campus by master-degreed high school faculty. The ways in which such programs are administered across the country vary widely, sometimes falling under state mandate and sometimes existing as ad hoc arrangements made by individual schools. This panel represents a geographically diverse selection of both two-and four-year college faculty and high school faculty. It will discuss the positive and negative aspects of these dual credit arrangements. The panel is sponsored by the MAA Committee on Two-Year Colleges. Wade Ellis, West Valley College, will serve as moderator. Panelists include Gary L. Britton, University of Wisconsin, Washington County; Philip M. Cheifetz, Nassau Community College; Ann Davidian, McArthur High School, Levittown, New York; Kathleen K. Berver, New Mexico State University; and Raymond J. Canon Jr., Baylor University. Friday, 8:00 a.m.-9:20 a.m.

Educational Testing Service Open Forum: Testing With Technology-Sharing Ideas To Meet the Challenges That Lie Ahead organized by Gloria S. Dion, Educational Testing Service. During the past decade, College Board programs (SAT I, SAT II, and AP Calculus) initiated the use of calculators on their tests, a practice consistent with recommendations of national mathematics organizations. The panel will address questions that arise when technology is available to students. Participants will be asked to share teaching practices and expectations of students, discuss how students solve problems using technology, evaluate sample questions for appropriateness on a national test, and make recommendations for future directions. Speakers from ETS include Gloria Dion, Carol Jackson, Chancey O. Jones, Patricia Klag, and Craig L. Wright. Friday, 9:35 a.m- 10:55 a.m.

Forming the Crystal Ball for Calculus organized by Donald B. Small, U.S. Military Academy. The present Calculus Reform Movement was launched with an AMS/MAA Panel discussion at the 1985 January Math Meetings in Anaheim, CA. During the last decade, the Movement expanded across the country. Several different types of calculus courses were developed around a changed pedagogy that emphasized active student involvement. The panelists will reflect on the work of the past decade in order to prepare for the next decade of reform. The panel is sponsored by the NSF and CRAFTY. Chris Arney, U.S. Military Academy, will serve as moderator. Panelists include Paul Zorn, St. Olaf College; David A. Smith, Duke University; Franklin A. Wattenberg, NSF; and Donald B. Small. Friday, 8:00 a.m.-9:20 a.m.

Project NExT and YMN Poster Session organized by Kenneth A. Ross, University of Oregon, and Kevin E. Charlwood, Washburn University. The session will include exhibits from 30 or so new or recent Ph.D.s in the mathematical sciences, or from those still pursuing graduate study. Applications should be submitted to Ken Ross (ross@math.uoregon.edu) or Kevin Charlwood (zzcharlw@acc.wuacc.edu). Friday, 8:00 a.m.-10:00 a.m.

The Effect of Calculus Reform on Student Performance in Subsequent Courses organized by Jack Bookman, Duke University; Susan L. Ganter, Worcester Polytechnic University and American Association for Higher Education; and Herbert E. Kasube, Bradley University. The MAA Committee on Calculus Reform and the First Two Years recognizes that the evaluation of calculus reform involves not only students' performance in the calculus, but also their performance in subsequent courses. This panel will bring together faculty who have spent time evaluating such performance as well as (possibly) faculty from client disciplines to discuss how well students who have completed a reformed calculus sequence perform in later courses as well that have traditionally had a calculus prerequisite. Panelists include Susan L. Ganter, American Association for Higher Education; Jack Bookman, Duke University; Judith Lee Baxter, University of Illinois at Chicago; John C. Polking, Rice University; Norman L. Webb, Wisconsin Center for Educational Research; and Herbert E. Kasube, Bradley University. Friday, 9:35 a.m.-10:55 a.m.

College Algebra Reform organized by Donald B. Small, U.S. Military Academy; Sarah Bush, Wiley College; and Eugene J. Taylor, Grambling State University. Instructors and/or developers of College Algebra reform programs are encouraged to share their work and experiences through this poster session sponsored by the CUPM Subcommittee on Calculus Reform and the First Two Years. Applications should be submitted to Sarah Bush, Wiley College, Marshall, TX 75670 or Gene Taylor, Department of Mathematics, Grambling State University, Grambling, LA 71245, e-mail: taylore@alphao.gram.edu. Friday, 1:00 p.m.-3:00 p.m.

Models for Intervention Projects organized by Robert E. Megginson, University of Michigan, and Manuel P. Berriozábal, University of Texas at San Antonio. As a response to the MAA resolution which encourages mathematics departments throughout the country to organize and conduct intervention programs, models of successful intervention programs will be presented and discussed. Topics will include program content, recruitment of participants, financial and in kind support, and linkages with local, state, and national public and private sector agencies. Panelists include Manuel Berriozábal; University of Texas at San Antonio, Florence Fasanelli, Director, College-University Resource Institute, Inc.; William A. Hawkins, Jr., SUMMA; Robert E. Megginson, University of Michigan; Irvin E. Vance, Michigan State University; and Charlene Morrow, Mount Holyoke College. Friday, 3:15 p.m.-4:45 p.m.

Teaching Awards Presentations. Winners of the Awards for Distinguished College or University Teaching of Mathematics will give presentations on the secrets of their success. Details will be published in the program booklet. Friday, 3:20 p.m.-5:00 p.m.

Informal Session on Actuarial Education organized by James W. Daniel, University of Texas, and Matthew J. Hassett, Arizona State University. This informal session sponsored by the Actuarial Faculty Forum provides an opportunity for those involved in actuarial education, interested in it, or interested in learning about it, to get together and discuss common concerns such as the upcoming changes in the actuarial examination system. Friday, 5:00 p.m.- 7:00 p.m.

Research on Undergraduate Mathematics Education. A continuation of Thursday evening's ARUME program with more presentations on this topic. Friday, 7:00 p.m.-9:00 p.m.

Isolated Teachers of Statistics organized by Dexter C. Whittinghill, Rowan University. This group will meet in order to discuss an agenda of topics related to the teaching of undergraduate statistics. The agenda will be determined before the meeting (solicited via email) by the organizer, who will also moderate the meeting. Meeting participants who would likely find this meeting helpful are self-labeled as "isolated" because they are the one person who teaches all or most of the statistics in their department or who "coordinates" the statistics curriculum. Especially invited are those interested in teaching statistics well, but may not have formal training in statistics. In many ways, the target audience is the same as the audience for the MAA-sponsored STATS workshops of recent years. Friday, 7:00 p.m.-9:00 p.m.

An Evening of Poetry organized by Alvin M. White, Harvey Mudd College. Read your poetry or other poetry that is appropriate for the occasion. The second hour will feature Sandra Cleman and Michael Dutko reading from their translations of the poetry of Sophia Kovalevskaia. Sponsored by the Humanistic Math Network. Friday, 7:15 p.m.-9:15 p.m.

State Standards organized by Kenneth A. Ross, University of Oregon, and Joan F. Donahue, Executive Director of NASSMC. Rolf Blank of the Council of Chief State School Officers will open this panel discussion with a concise description of the nature and purposes of state standards. There will be a representative from each of the three standards-evaluating groups: American Federation of Teachers, the Council for Basic Education, and the Fordham Foundation. Alice Gill, AFT, a representative of CBE, and Ralph A. Raimi, Professor Emeritus at the University of Rochester and co-author of the report from the Fordham Foundation, have agreed to participate. These panelists will be asked to respond to questions regarding the purpose, criteria, procedures, evaluators, and "grade interpretation" associated with each study. Joseph Rosenstein, Director of the New Jersey Mathematics Coalition and leader of group who created the state standards in New Jersey, will present a brief discussion of the New Jersey Mathematics Standards in light of the evaluation procedures described by the panel. Henry Alder, University of California-Davis, has kindly agreed to moderate the session. It will be co-sponsored by the MAA and the National Alliance of State Science and Mathematics Coalitions (NASSMC). Saturday, 8:30 a.m.-10:00 a.m.

Life After Retirement organized by Andrew Sterrett, Jr., Denison University. Saturday, 8:00 a.m.-9:20 a.m.

Planning for Retirement organized by Carol Shaw, MAA. Planning for retirement includes financial and estate planning. A certified financial planner will discuss ways to plan for and during retirement to maximize your financial results. Saturday, 9:30 a.m.-10:50 a.m.

Teaching Collaborations Between Graduate Departments in Mathematics at Four-Year Institutions, and Community Colleges organized by Pamela E. Matthews, American University. Such collaborations give graduate students teaching experience while meeting community colleges adjunct needs; schools can work together to improve the graduate students' teaching. The panel is sponsored by the MAA Committee on the Teaching of Undergraduate Mathematics (CTUM). Panelists include Paul Latiolais, Portland State University; Janet P. Ray, Seattle Central Community College; and Ginger Warfield, University of Washington. Saturday, 1:00 p.m.-2:20 p.m.

SUMMA Special Presentation organized by William A. Hawkins, Jr., Director of the SUMMA (Strengthening Underrepresented Minority Mathematics Achievement) Program. Presentations will be given on intervention programs for minority precollege students. Speakers to be announced. There will be ample time for questions and exchange with the presenters. Saturday, 1:00 p.m.-2:20 p.m.

Improved Teacher Preparation: What Mathematics Departments Can Do organized by James Loats, Metropolitan State College of Denver. This session will open with brief descriptions by the panelists of innovations in the way their departments prepare secondary teachers. Then participants will divide into small groups to share and learn about ideas for change that best fit their own environment. Information will also be available that summarizes changes that have been made at the fifteen NSF funded Collaboratives for Excellence in Teacher Preparation (CETP). This interactive panel session is sponsored by the MAA Committee on the Mathematical Education of Teachers (COMET). Saturday, 1:00 p.m.-2:20 p.m.

Integrating Active Learning Techniques into Lectures organized by Sandra L. Rhoades, Keene State College. This participatory workshop is for faculty who are interested in learning about and discussing ways to incorporate active learning techniques into lectures. For some people, this may be a beginning step towards moving away from lectures; for others, it is simply a way to increase the effectiveness of their lectures. A wide variety of techniques that require minimal in-class time will be presented and discussed. Workshop participants will be actively involved; little or no lecturing will occur during the workshop. Saturday, 1:00 p.m.-3:00 p.m.

Joint Sessions

Mathematics and Education Reform, William H. Barker, Bowdoin College; Jerry L. Bona, University of Texas at Austin; Naomi Fisher, University of Illinois at Chicago; and Kenneth C. Millett, University of California Santa Barbara. Wednesday and Thursday, mornings and afternoons. (AMS-MAA-MER)

Model Theory and Its Applications, Anand Pillay, MSRI and University of Illinois, Urbana. Wednesday and Thursday, mornings and afternoons. (AMS-ASL)

Prize Session and Reception: To showcase the achievements of the recipients of various prizes, the AMS and MAA are co-sponsoring this event. All meeting participants are invited. The Frank and Brennie Morgan Prize for Outstanding Research in Mathematics by an Undergraduate Student (co-sponsored by the AMS, MAA, and the Society for Industrial and Applied Mathematics) will be presented. The MAA prizes include the Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics, the Chauvenet Prize, the Yueh-Gin Gung and Dr. Charles Y. Hu Award for Distinguished Service to Mathematics, and Certificates of Meritorious Service. The AMS will announce the winners of the Leroy P. Steele Prizes, the Bôcher Memorial Prize, and the Ruth Lyle Satter Prize in Mathematics. The AWM will present the Louise Hay Award for Contributions to Mathematics Education and the Alice T. Schafer Prize for Excellence in Mathematics by an Undergraduate Woman. A reception will immediately follow. Thursday, 4:25 p.m.

The Draft of the Updated NCTM Standards for School Mathematics: An Opportunity for Your Feedback National Council of Teachers of Mathematics (NCTM) released the draft of the Principles and Standards for School Mathematics in October. Members of the writing team will share their views and pose questions for the audience. Special attention will be given to the input and feedback received from the Association Review Groups. The panel will be moderated by Joan Ferrini-Mundy, National Research Council. Panelists include Kathleen Heid, Pennsylvania State University; Judith Roitman, University of Kansas; and Alan Schoenfeld, University of California-Berkeley. Co-sponsored by the MAA, the AMS Committee on Education, and NCTM. Friday, 9:35 a.m.-10:55 a.m.

Geometry in Dynamics, Krystyna Kuperberg, Auburn University. Friday and Saturday, mornings and afternoons. (AMS-AWM)

Research in Mathematics by Undergraduates, John E. Meier, Lafayette College, and Leonard A. VanWyk, James Madison University. Friday and Saturday mornings. (AMS-MAA)

The History of Mathematics, Karen H. Parshall, University of Virginia, and Victor J. Katz, University of the District of Columbia; Friday and Saturday, mornings and afternoons. (AMS-MAA)

 The Riverwalk — photos courtesy of the San Antonio Convention & Visitors Bureau

AMS Special Sessions

Banach Spaces of Holomorphic Functions and Operators on These Spaces, Benjamin A. Lotto, Vassar College, and Pamela B. Gorkin, Bucknell University. Wednesday and Thursday, mornings and afternoons.

Bergman Spaces and Related Topics, Peter L. Duren, University of Michigan, Ann Arbor, and Michael Stessin, SUNY at Albany. Friday and Saturday, mornings and afternoons.

Combinatorial Topology, Laura M. Anderson and Jonathan P. McCammond, Texas A&M University. Wednesday and Thursday, mornings and afternoons.

Commutative Algebra, Scott Thomas Chapman, Trinity University. Wednesday and Thursday, mornings and afternoons.

Commutative Algebra and Algebraic Geometry, Roger A. Wiegand, University of Nebraska and Purdue University, and Susan Elaine Morey, Southwest Texas State University. Friday and Saturday, mornings and afternoons.

Computational Algebraic Geometry for Curves and Surfaces, Mika K. Seppala, Florida State University, and Emil J. Volcheck, National Security Agency. Friday and Saturday, mornings and afternoons.

Development of Electronic Communications in Mathematics, Alfonso Castro, University of North Texas, and Rafael De La Llave, University of Texas at Austin. Wednesday and Thursday, mornings and afternoons.

Discrete Models and Difference Equations, Saber Elaydi, Trinity University, and Gerry Ladas, University of Rhode Island. Wednesday and Thursday, mornings and afternoons.

Dynamical, Spectral, and Arithmetic Zeta-Functions, Michel L. Lapidus, University of California, Riverside, and Machiel van Frankenhuysen, Institut des Hautes Etudes Scientifiques. Friday and Saturday, mornings and afternoons.

Hamiltonian Mechanics: Applications to Celestial Mechanics and Chemistry, Michael K. Rudnev, The University of Texas at Austin, and Stephen R. Wiggins, California Institute of Technology. Wednesday and Thursday, mornings and afternoons.

Mathematics Education and Mistaken Philosophies of Mathematics, Saunders Mac Lane, University of Chicago, and Richard A. Askey, University of Wisconsin-Madison. Wednesday and Thursday, mornings and afternoons.

Operator Algebras and Applications, Allan P. Donsig, University of Nebraska-Lincoln, and Nik Weaver, Washington University. Friday and Saturday, mornings and afternoons.

Probabilistic Combinatorics, Béla Bollobás, University of Memphis, and Jeong Han Kim, Microsoft. Friday morning and afternoon.

Recent Developments in Differential Geometry, Huai-Dong Cao and Jian Zhou, Texas A&M University. Wednesday and Thursday, mornings and afternoons.

Several Complex Variables, Emil J. Straube and Harold P. Boas, Texas A&M University. Friday and Saturday, mornings and afternoons.

Singularities in Algebraic and Analytic Geometry, Caroline G. Grant, U.S. Naval Academy, and Ruth I. Michler, University of North Texas. Wednesday and Thursday, mornings and afternoons.

The Functional and Harmonic Analysis of Wavelets, Lawrence W. Baggett, University of Colorado, and David R. Larson, Texas A&M University. Wednesday and Thursday, mornings and afternoons.

The Mathematics of the Navier-Stokes Equations, Peter A. Perry and Zhong-Wei Shen, University of Kentucky. Friday and Saturday, mornings and afternoons.

ADVANCE REGISTRATION DEADLINES

November 9 —for room lottery and/or inclusion in the Winter Lists for the Employment Register

November 23 —for hotel reservations and advance materials mailing

December 21 — for advance registration rates. After this date, participants must register at the meeting at the on-site registration rate. Please note that forms received after the deadline will be returned and full refunds issued.

Book Sales and Exhibits:

All meeting registrants are encouraged to visit the book, education media, and software exhibits. Books published by the AMS and the MAA will be available at discounted prices. Wednesday, 12:00 p.m.-5:00 p.m.; Thursday and Friday, 9:30 a.m.-5:30 p.m.; and Saturday, 9:00 a.m.-12:00 p.m.

Mathematical Sciences Employment Register:

For details about participating in the the San Antonio Mathematical Sciences Employment Register, refer to MAA Online at http://www.maa.org or call Diane Mack at AMS, 800-321-4267

register online at www.maa.org

MAA Contributed Paper Sessions

The Use of Technology in Teaching Abstract Mathematics, Douglas E. Ensley, Shippensburg University. Wednesday and Friday mornings.

Quantitative Literacy, Barbara A. Jur, Macomb Community College; Richard A. Gillman, Valparaiso University; Jimmy L. Solomon, Georgia Southern University; Allen E. Pulsion, College of Science and Technology; and Linda R. Sons, Northern Illinois University. Wednesday and Friday mornings.

Teaching Statistics: Teaching the Reasoning and New Technological Tools, Dexter C. Whittinghill, Rowan University; Franklin A. Wattenberg, National Science Foundation; Mary R. Parker, Austin Community College; and Donald L. Bentley, Pomona College. Wednesday and Friday mornings.

Mathematics Competitions, Harold B. Reiter, University of North Carolina Charlotte; Stephen B. Maurer, Swarthmore College; William P. Fox, USMA; and Susan Schwartz Wildstrom, Montgomery City Schools. Wednesday morning and Thursday afternoon.

Innovations in Teaching Abstract Algebra, Vesna Kilibarda, University of Alaska Southeast; Allen C. Hibbard, Central College; and Ellen Maycock Parker, DePauw University. Wednesday afternoon.

Ethical, Humanistic, and Artistic Mathematics, Alvin M. White, Harvey Mudd College; Robert P. Webber, Longwood College; and Stefanos P. Gialamas, Illinois Institute of Art. Wednesday and Friday afternoons.

Geometry in the Classroom in the Next Millennium, Colm K. Mulcahy, Spelman College; David W. Henderson, Cornell University; and Barry Schiller, Rhode Island College. Thursday and Saturday mornings.

Discrete Mathematics Revisited, Richard K. Molnar, Macalester College, and Suzanne M. Molnar, College of St. Catherine. Thursday and Saturday mornings.

Projects That Work in Applied Mathematics Courses, Alexandra Kurepa, North Carolina A&T State University, and Henry Warchall, University of North Texas. Thursday and Saturday afternoons.

Innovative Use of Distance Learning Techniques to Teach Post-Secondary Mathematics, Brian E. Smith, McGill University, and Marcelle Bessman, Jacksonville University. Thursday and Saturday afternoons.

Integrating Mathematics and Other Disciplines, William G. McCallum, University of Arizona, Nicholas T. Losito, SUNY Farmingdale; and Yajun Yang, SUNY Farmingdale. Thursday and Saturday afternoons.

The Integral Role of the Two-Year College in the Preservice Preparation of Elementary School Teachers, Mercedes A. McGowen, William Rainey Harper College; Joanne V. Peeples, El Paso Community College; and William E. Haver, Virginia Collaborative for Excellence in the Preparation of Teachers. Friday morning and Saturday afternoon.

Proof in Mathematical Education, G. Joseph Wimbish, Huntingdon College, and Gary Davis, University of Southampton. Friday afternoon.

For more details about MAA Contributed Paper sessions, refer to the August-September issue of *FOCUS* Newsletter or *MAA Online* at http://www.maa.org/meetings/jan99/cp.html.

MAA Minicourses

Minicourse #1:

Mathematics, Calculus, and Modeling Using the TI-92, organized by Phoebe T. Judson, Trinity University; William C. Bauldry, Appalachian State University; and Richard D. West, U. S. Military Academy. Participants will examine ways in which the symbolic manipulation and data matrix tables of the TI-92 facilitate student understanding of calculus. The basic concepts of the derivative as rate of change, the definite integral as accumulation, and differential equations will be introduced from a modeling perspective. Some familiarity with the TI-92 is essential. TI-92s will be available. The course is based on the text Calculus, Mathematics, and Modeling by Ellis, Bauldry, Fiedler et al. Part A: Wednesday, 8:00 a.m.-10:00 a.m.; Part B: Wednesday, 4:30 p.m.-6:30 p.m.

Minicourse #2:

Mathematical Finance organized by Walter R. Stromquist, Berwyn, PA. We will cover two main ideas of modern finance: portfolio optimization and option valuation. Portfolio optimization means allocating a fixed investment fund among instruments (e.g., stocks) in order to maximize return and/or minimize risk; the techniques range from matrix algebra to quadratic programming. In option valuation, we will derive the Black-Scholes formula under naive assumptions and then show how the modern no-arbitrage theory allows us to apply it more generally. The presenter will draw on practical examples from his consulting work. Part A: Wednesday, 2:15 p.m.-4:15 p.m.; Part B: Thursday, 8:00 a.m.-10:00 a.m.

Minicourse #3:

Developing Materials for Liberal Arts Mathematics That Use Elementary Graph Theory and Emphasize Applications to Everyday Experience organized by Helen Christensen, Loyola University. Content, techniques, and illustrative problems will be presented, suitable for enabling participants to develop materials for a liberal arts mathematics course appropriate to their student population, using a limited amount of theory, and emphasizing day-to-day applications to which students can readily relate. Included, for each type of problem considered, will be a synopsis of relevant theory, demonstration problems with solutions, and participant team solutions of similar problems. Part A: Wednesday, 8:00 a.m.-10:00 a.m.; Part B: Wednesday, 4:30 p.m.-6:30 p.m.

Minicourse #4:

The Mathematics of the Perfect Shuffle organized by S. Brent Morris, National Security Agency. This Minicourse is based on Magic Tricks, Card Shuffling, and Dynamic Computer Memories published by MAA in January 1998. The focus of the course is the perfect shuffle, a permutation used by mathematicians, magicians, and computer scientists for seemingly different ends. The shuffle and several generalizations will be introduced, the group structure generated by perfect shuffles will be explored, several card tricks will be taught, and the course concludes with computer circuits using the perfect shuffle interconnection. Students should bring a new deck of cards, preferably Bicycle or Aviator brands. Part A: Wednesday, 8:00 a.m-10:00 a.m.; Part B: Thursday 10:15 a.m.-12:15 p.m.

Minicourse #5:

Building Custom Classroom Capsules with Maple Programming organized by Douglas E. Ensley, Shippensburg University. Computer algebra systems (CAS) should not be limited to the commands that come "built in." With simple programming constructs like loops, conditional statements and procedures, CAS become highly specialized classroom tools for building connections vital to the learning process. Course participants will learn to program in Maple in order to build custom procedures for exploratory use and will receive specific examples for calculus and discrete math. Some experience with computer programming is required. Part A: Wednesday, 4:30 p.m.-6:30 p.m.; Part B: Thursday, 10:15a.m.-12:15 p.m.

Minicourse #6:

Cooperative Learning in Undergraduate Mathematics Education organized by Barbara E. Reynolds, Cardinal Stritch University, and William E. Fenton, Bellarmine College. Participants will be introduced to cooperative learning in undergraduate mathematics courses at all levels. Participants will engage in various cooperative learning experiences; work with several different small groups, and reflect on ways of forming groups in their own classrooms; discuss issues related to assessment and grading; and talk about potential problems, and ways of avoiding or overcoming such problems. No prior experience with cooperative learning is expected. Some readings will be distributed during the course. Part A: Friday, 1:00 p.m.-3:00 p.m.; Part B: Saturday, 1:00 p.m.-3:00 p.m.

Minicourse #7:

Finding Motivation for Upper Division Mathematics through Original Sources organized by Jerry M. Lodder and David J. Pengelley, New Mexico State University. We will focus on using original historical sources to teach upper division mathematics in a senior-level capstone course, or to enrich existing courses in algebra, analysis, geometry, number theory, or numerical analysis. Participants will receive advance selections from two chapters of our four-author text being written for an established capstone course using original sources. By working with the book materials, participants will learn how original sources can be used to enhance motivation in mathematics courses. Part A: Wednesday, 4:30 p.m-6:30 p.m.; Part B: Thursday, 2:15 p.m.-4:15 p.m.

Minicourse #8:

Teaching a Course in the History of Mathematics organized by Victor J. Katz, University of the District of Columbia, and V. Frederick Rickey, U.S. Military Academy. Many colleges and universities are introducing courses in the history of mathematics and asking mathematicians without a strong background in history to teach them. This Minicourse will assist those teaching history by introducing participants to numerous resources, discussing differing approaches and sample syllabi, providing suggestions for student projects and course assessments, and, in general, giving those teaching such courses for the first time the confidence to master the subject themselves and to present the material to their students. Part A: Wednesday, 2:15 p.m-4:15 p.m.; Part B: Thursday, 8:00 a.m.-10:00 a.m.

Minicourse #9:

Exploring Abstract Algebra through Interactive Labs organized by Allen C. Hibbard, Central College, and Kenneth M. Levasseur, University of Massachusetts Lowell. Using Mathematica, participants will become engaged in examining a series of interactive laboratory activities for groups and rings (including morphisms). The notebooks encourage exploration and investigation and are intended to motivate/expand upon classroom discussions. The labs are independent of any text. No previous experience (or programming) with Mathematica is required, since packages are read-in that define the required functionality. The labs and packages are based on EAAM, the Exploring Abstract Algebra with Mathematica project. See http://www.-central.edu/eaam.html. Part A: Thursday, 2:15 p.m.-4:15 p.m.; Part B: Friday, 8:00 a.m.-10:00 a.m.

Minicourse #10:

Facilitating Active Learning: Concrete Ways to Foster Student Participation organized by Sandra L. Rhoades, Keene State College. This Minicourse provides a place for hearing about, sharing, and experiencing a broad range of techniques for facilitating learning. No one method or technique is promoted, rather a number of concrete ways to get students involved in their learning are discussed and illustrated. Participants exchange ideas, discuss and reflect on the techniques being used in the Minicourse, as well as those being shared, and consider how to incorporate new techniques into their own classrooms. Part A: Wednesday, 2:15 a.m.-4:15 p.m.; Part B: Friday, 8:00 a.m.-10:00 a.m.

Minicourse #11:

Creating Interactive Texts in Mathematica organized by John R. Wicks, North Park University. Participants will create their own lesson on a specific, suggested topic, by completing an interactive lesson, written as a Mathematica Notebook, geared to their specific level of expertise. One Notebook will be geared to a novice user who is still learning the basics of Mathematica, while another will assume a bit more familiarity, and the third will focus on more advanced features of lesson design. All participants will receive a floppy disk of all materials. Part A: Friday, 1:00 p.m.-3:00 p.m.; Part B: Saturday, 8:00 a.m.-10:00 a.m.

Minicourse #12:

Writing and the Teaching of Mathematics organized by John E. Meier, Lafayette College, and Thomas W. Rishel, Cornell University. Carefully designed writing assignments are effective pedagogical tools to help students learn mathematics. We will discuss how to create such assignments, evaluate student essays, and the role of writing assignments in the mathematics curriculum. We'll also discuss "narrative," "process writing," and other terminology used by our colleagues in writing departments. This Minicourse will be partly based on our book *Writing and the Teaching and Learning of Mathematics*, published by the MAA. Part A: Thursday, 2:15 p.m.-4:15 p.m.; Part B: Friday, 1:00 p.m.-3:00 p.m.

Minicourse #13:

Getting Students Involved in Undergraduate Research organized by Joseph A. Gallian, University of Minnesota-Duluth, and Aparna W. Higgins, University of Dayton. We will discuss strategies and give examples for involving undergraduate students in doing research in mathematics. The discussion will include REUs year-long projects, and short investigations suitable for a variety of levels of student motivation, interest and talent. Sources for projects will be suggested, as will outlets for the results of undergraduate research. Part A: Wednesday, 2:15 a.m.-4:15 p.m.; Part B: Thursday, 10:15a.m.-12:15p.m.

Minicourse #14:

An Introduction to Wavelets organized by Colm K. Mulcahy, Spelman College. Wavelets are a relatively recent arrival on the scene, and they provide an alternative to classical Fourier methods for one- and multi-dimensional data analysis and synthesis. This Minicourse will introduce the basics of wavelets and some common applications (e.g., to image compression), with the help of several hands-on explorations using Matlab. Prerequisites will be kept to a minimum: in particular, no expertise in Fourier analysis or prior familiarity with Matlab is assumed. Part A: Friday, 3:15 p.m.-5:15 p.m.; Part B: Saturday, 1:00 p.m.-3:00 p.m.

Minicourse #15:

Music and Mathematics organized by Leon Harkleroad, Bard College. Over the years people have used mathematics in various ways to describe, analyze, and create music. This Minicourse will explore the applications of mathematical areas such as number theory, probability, and group theory to musical topics like tuning systems, bell-ringing, and 20th-century compositional technique. Emphasis will be placed on how Minicourse participants can incorporate this material into their classes or even design a service course on music and mathematics. Part A: Friday, 3:15 p.m.-5:15 p.m.; Part B: Saturday, 1:00 p.m.-3:00 p.m.

Minicourse #16:

Using Hand-Held CAS Throughout the Mathematics Curriculum organized by Wade Ellis, West Valley College, L. Carl Leinbach, Gettysburg College; and Bert K. Waits, Ohio State University. The course will begin with an overview of the calculus sequence and the advantages of using computer algebra in presenting the course. However, the major emphasis will be on the use of the TI-92 Plus in doing advanced mathematics. Topics will include graphical techniques in multivariable calculus; advanced algebraic and numerical techniques in linear algebra; and differential equations from a symbolic and graphical point of view. Participants will have access to a TI-92 Plus or TI-89 calculator and will have hands-on experience with the CAS calculator. Part A: Thursday, 2:15 p.m.-4:15 p.m.; Part B: Saturday, 8:00 a.m.-10:00 a.m.

Minicourses enrollment is only open to Joint Meetings registrants. Separate registration fees apply to minicourse (see the registration form). If Minicourses are fully subscribed or cancelled, a refund is available. A refund including the advance meeting registration fee can be awarded if you registered for the meeting only to attend Minicourses (otherwise subject to the 50% rule). The MAA reserves the right to cancel any undersubscribed minicourse.

MAA Short Course

Mathematics in Finance organized by Robert F. Almgren, University of Chicago. The modern financial industry uses mathematics of ever-increasing sophistication, and employs large numbers of our graduates. The fundamental models can be grasped in a few hours, and provide ideal material for undergraduate courses in probability, differential equations, and applied math modeling. At higher levels, the field makes challenging demands in stochastic calculus, PDEs with free boundaries, and large-scale computation. We will cover the basic models and the underlying mathematics, present practical methods for their solution, and discuss their use in real life. Speakers and topics include: Robert F. Almgren, The University of Chicago, *A Program on Financial Mathematics;* Ara Pehlivanian, Morgan Stanley Dean Witter, *Portfolio Theory and Risk Management;* Yuri Balasanov, Nations Bank/University of Chicago, *Interest Rate Modeling and Fixed Income Products;* Jingyi Zhu, Salomon Smith Barney, *Calibrating Models with Market Data;* Neil Chriss, Goldman Sachs Asset Management/NYU, *Preparing for a Career in Financial Mathematics;* Steve Allen, Chase Manhattan Bank/NYU, *An Historical Overview of Mathematics in Finance.* Monday and Tuesday, January 11 and 12 at the Hilton Palacio Del Rio Hotel.

AMS Short Course

Nonlinear Control organized by Héctor Sussmann, Rutgers University, and Kevin Grasse, University of Oklahoma. The six lecturers and their topics are Kevin Grasse, *Introduction to Differential-Geometric Control;* Heinz Schaettler, Washington University, *Introduction to the Maximum Principle of Optimal Control Theory;* Héctor J. Sussmann, *Recent Generalizations of the Maximum Principle;* H. Mete Soner, Carnegie-Mellon University, *Dynamic Programming and Viscosity Solutions;* Richard Murray, California Institute of Technology, *Control of Nonholonomic Mechanical Systems;* and Eduardo D. Sontag, Rutgers University, *Stabilizations of Completely Observed and Partically Observed Nonlinear Systems.* Monday and Tuesday, January 11 and 12 at the Hilton Palacio Del Rio Hotel.

A separate registration fee applies to Short Courses (see registration form). Short Courses begin two days before other meeting activities. Participants are not required to register for the meeting.

Other Meeting Sessions

STUDENT ACTIVITIES

Undergraduate Research: Student Poster Session organized by Aparna W. Higgins, University of Dayton, and Mario U. Martelli, California State University-Fullerton. The CUPM Subcommittee on Research by Undergraduates invites undergraduate students to display posters describing their mathematical research projects. Posters will be judged on their mathematical content and on the presentation, with monetary prizes for the best poster presentations. Poster boards will be provided. A one-page abstract describing the project should be sent by December 1, 1998 to Aparna Higgins higgins@saber.udayton.edu. However, space is limited, and there is no guarantee that all submissions will be accepted. Friday, 4:00 p.m.-7:00 p.m.

Joint Pi Mu Epsilon and MAA Student Chapter Advisors' Breakfast. Contact Richard D. Jarvinen, richard.d.jarvinen1@jsc.nasa.gov. Friday, 7:00 a.m.-8:00 a.m.

MAA Student Lecture

Pianos and Continued Fractions by Edward G. Dunne, American Mathematical Society. There will be an Ice Cream Social following the lecture. Friday, 7:30 p.m.-8:20 p.m.

Organizational Meetings

MAA

Business Meeting. Saturday, 11:10 a.m.-11:40 a.m

Board of Governors. Tuesday, 8:30 a.m.-4:00 p.m.

Section Officers. Wednesday, 4:30 p.m.-6:30 p.m.

AMS

Council Meeting.
Tuesday, 1:00 p.m.-10:00 p.m.

Business Meeting.
Saturday, 11:45 a.m-12:15 p.m.

Sessions by Other Organizations

Association for Symbolic Logic (ASL). This two-day program will includes Invited Addresses and Contributed Paper sessions. Friday and Saturday

Association for Women in Mathematics (AWM). Nineteenth Annual Emmy Noether Lecture, Krystyna Kuperberg, Auburn University, *Aperiodic dynamical systems.* Thursday, 9:00 a.m.-9:50 a.m.

AWM Panel Discussion. Wednesday, 3:20 p.m.-4:20 p.m.

AWM Business Meeting. Wednesday, 4:20 p.m.-4:50 p.m.

AWM Workshop. With funding from the Office of Naval Research and the National Science Foundation, AWM will conduct its workshop for women graduate students and women who have received the Ph.D. within the last five years. Twenty women will be selected in advance of the workshop to present their work. The selected graduate students will present posters and the postdocs will give 20-minute talks. The workshop will also include a panel discussion on issues of career development and a luncheon. Participants will have the opportunity to meet with other women mathematicians at all stages of their careers. All mathematicians (female and male) are invited to attend the entire program. Inquiries may be made to AWM by telephone: 301-405-7892 or by e-mail: awm@math.umd.edu. AWM seeks volunteers to lead discussion groups and to act as mentors for workshop participants. If you are interested in volunteering, please contact the AWM office. Saturday, 9:00 a.m.-5:00 p.m.

National Association of Mathematicians (NAM). Granville-Brown Session of Presentations by Recent Doctoral Recipients in the Mathematical Sciences moderated by William A. Massey, Lucent Technology, Bell Labs. Friday, 2:15 p.m.-5:00 p.m.

NAM: Cox-Talbot Address. Johnny L. Houston, Elizabeth City State University, *The End of One Era, the Dawn of Another.* Friday evening after the banquet.

NAM: Effective Networking and Research Dialogue Via Teleconferences/Telecommunication panel discussion moderated by Leon C. Woodson, Morgan State University, includes James C. Turner, Arizona State University, among the panelists. Saturday, 9:00 a.m.-9:50 a.m.

NAM Business Meeting. Saturday, 10:00 a.m.-10:50 a.m.

NAM William W. S. Claytor Lecture by Earl R. Barnes, Georgia Institute of Technology, *Maximum Cliques and Minimum Colorings of Graphs.* Saturday, 1:00 p.m.-2:00 p.m.

Rocky Mountain Mathematics Consortium (RMMC). Board of Directors Meeting. Friday, 2:15 p.m.-4:10 p.m.

Young Mathematicians Network (YMN). Concerns of Young Mathematicians: A Town Meeting panel discussion will focus on the current primary concerns for young mathematicians, with emphasis on audience participation. Wednesday, 7:15 p.m.-8:15 p.m.

SOCIAL EVENTS

Advance purchases are recommended for ticketed events. If available, tickets will be sold on-site.

Mathchats and Graduate Student Reception. Well-known mathematicians representing a wide range of disciplines will join graduate students for informal chats on a river boat cruise, followed by a reception. NOTE: This event is only open to students who sign up on the Advance Registration/Housing (ARH) Form. Free admission. Tuesday, 5:30 p.m.-10:00 p.m.

First-Time Participants Reception. Sponsored by The AMS and the MAA Committee on Membership. All meeting participants, especially first-time attendees, are encouraged to attend. Come and pickup tips about how to get the most of your meeting experience. Refreshments will be served. Free admission. Wednesday, 6:00 p.m.-7:00 p.m.

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November 23 —for hotel reservations and advance materials mailing

December 21 — for advance registration rates. After this date, participants must register at the meeting at the on-site registration rate. Please note that forms received after the deadline will be returned and full refunds issued.

Mathematical Sciences Institutes Reception. Meet old friends, reminisce about activities at a research institute, and learn about their future programs. Participating institutes include The Fields Institute for Research in Mathematical Sciences, The Institute for Mathematics and Its Applications, The Mathematical Sciences Research Institute, The National Institute of Statistical Sciences, and The Center for Discrete Mathematics and Theoretical Computer Science. Wednesday, 5:30 p.m.-7:30 p.m.

AWM Dinner to honor AWM's Noether Lecturer. A sign-up sheet for those interested will be located at the AWM table in the exhibit area and also at the AWM panel discussion. Wednesday.

AWM Reception. Wednesday, 9:30 p.m.-11:00 p.m.

The Mathematicians and Education Reform (MER) Banquet welcomes mathematicians who are interested in college-level educational reform to attend. This is an opportunity to make or renew contacts with other mathematicians involved in educational projects. The after-dinner discussion is an open forum for participants to voice their impressions, observations, and analyses of the current education scene. Tickets are $39. Thursday, 6:30 p.m. (dinner served at 7:30 p.m.)

Two-Year College Reception sponsored by Addison Wesley Longman. Thursday, 5:45 p.m.-7:00 p.m.

NAM Banquet. Tickets are $39. Friday, 5:30 p.m. (dinner served at 6:00 p.m.)

University of Illinois Alumni Gathering. Friday, 5:00 p.m.-7:00 p.m.

AMS Banquet. This year's banquet will honor Franklin P. Peterson, AMS Treasurer since 1973, and Robert M. Fossum, AMS Secretary since 1989, who are both retiring. Open to all participants. Tickets are $39. Saturday, 6:30 p.m. (dinner served at 7:30 p.m.)

Registration and Hotel Accommodations

Advance Registration

Save money — register by **December 21.** Only on-site registration available after this date. United States and Canadian participants who register by November 23 will receive their badges, program, and event tickets by mail two weeks before the Meetings, unless otherwise indicated on the Advance Registration/Housing Form. Due to mail delays, the Mathematics Meetings Service Bureau (MMSB) recommends that Canadian Advance Registrants pick up materials at the Meeting. A $5 fee will be charged to replace programs and badges.

Room Lottery

Advance registrations received before November 9 will be entered in a drawing for complimentary hotel rooms in San Antonio. So register early!

Confirmations

Registrations sent by mail and email will be confirmed by email, unless otherwise stated on the registration form.

Email and Internet Advanced Registration

Advance registration can be submitted via email or the internet. VISA, MasterCard, Discover, and American Express payments accepted. Charges will be made in U.S. funds.

Email Request forms via email from meetreg-request@ams.org or see MAA Online at www.maa.org. Completed email forms should be sent to: meetreg-submit@ams.org
Internet See MAA Online at: www.maa.org

Refund Policy

Cancellation notifications must be received by January 9th for a 50% refund of advance meeting registration, MAA Minicourses and Short Course fees. For ticketed events, notifications must be received by December 30th.

Membership Invitations

Meeting registrants who are not members of either AMS and/or MAA will receive special membership invitations after the meetings.

Field of Interest: To be included in a list of individuals sorted by mathematical interest, provide the one mathematical subject classification number of your major area of interest on the Advance Registration/Housing Form. (A list of these numbers is available by sending an empty email message to abs-submit@ams.org; include the number 939 as the subject of the message.) The master copy of this list will be posted on a bulletin board near the registration area.

Hotel Reservations

To reserve a room through the MMSB, follow the instructions on the attached Hotel Reservations form. Forms and payment must be submitted by November 23 to guarantee rates. For reservations after this date, call the MMSB.

MISCELLANEOUS INFORMATION

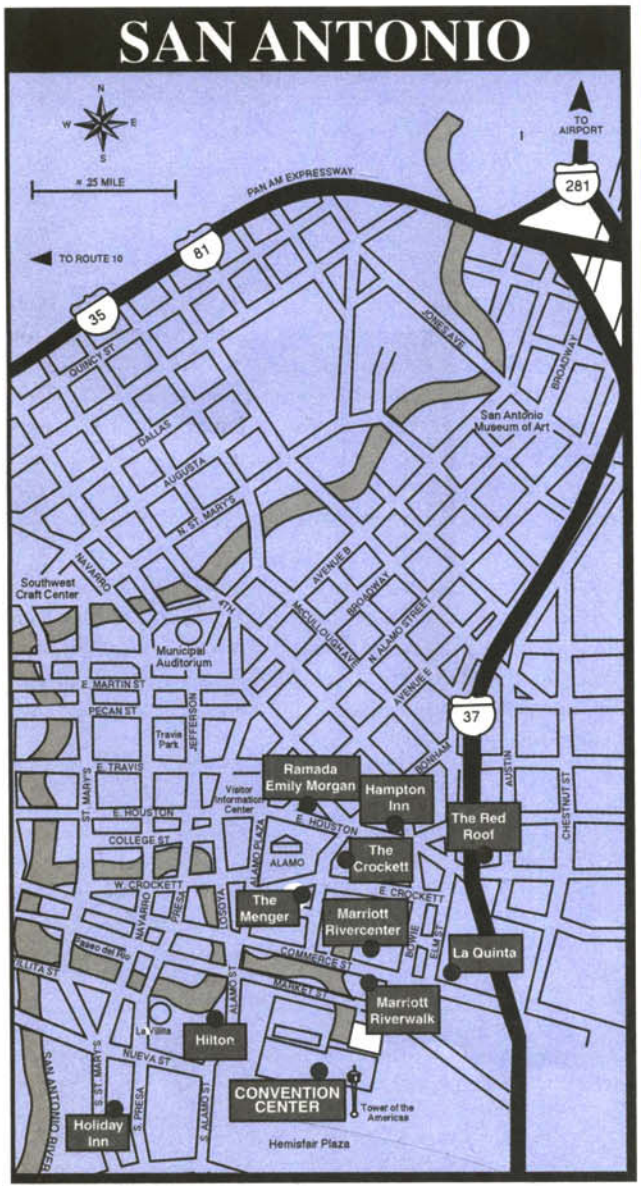
Child Care: The Marriott Rivercenter and Riverwalk hotels will arrange for in-room child care for Marriott guests through its concierge desk. For rates and reservations, call at least five hours in advance: 210-223-1000 (Rivercenter) or 210-224-4555 (Riverwalk). Arrangements represent a contractual agreement between each individual and the child care provider. The Joint Meeting assumes no responsibility for the services rendered.

Email at the Meeting: The AMS and MAA are grateful for the support of Mathematica (a product of Wolfram Research) in underwriting the considerable cost to establish email facilities for Joint Mathematics Meetings participants. This email facility will be available for participants during the meeting.

Information Distribution: Tables are set up in the exhibit area for dissemination of general information of possible interest to the members and for the dissemination of information of a mathematical nature not promoting a product or program for sale.

For details on exhibiting products for sale, contact the exhibits manager, MMSB, P.O. Box 6887, Providence, RI 02940.

Telephone Messages: The most convenient method for leaving a message is to do so with the participant's hotel. Messages may also be left at the Meeting Registration Desk from January 13 through 16 during open hours. Messages will be posted on the Mathematics Meetings Message Board. The Meeting Registration Desk telephone number will be published in the program.



Travel: The San Antonio International Airport is approximately ten miles from downtown San Antonio. Delta Air Lines has been selected as the official airline for these meetings. Special rates have been negotiated, but the MMSB cannot guarantee that these will be the lowest fares when you make your arrangements. For reservations call Delta Meeting Network Reservations at 1-800-241-6760 weekdays between 7:30 a.m. and 11:00 p.m. (8:30 a.m.-11:00 p.m. on weekends) Eastern Standard Time. Refer to file number 117809A. These discounts are available only through Delta Meeting Network Reservation toll-free number.

Star Shuttle is the official airport shuttle, departing every 15 minutes, 24 hours a day. The fare is $7 one way, or $13 round trip. Call 210-341-6000 for reservations; pickup is outside baggage claim. Cab fare is approximately $13 from the airport to the Convention Center.

Alamo Rent-A-Car offers special meeting car rental rates, effective January 4-23, 1999. All Alamo rentals include unlimited free mileage and are available to renters 25 years and older. Reservations must be made at least 24 hours in advance. Convention rates may be limited. The 24-hour toll free reservation number is 1-800-732-3232; cite group ID#247733 and rate code GR.

Driving Directions: From I-35 North take I-37 South to the downtown area. Exit Commerce St. and drive west for two blocks. The Marriott Rivercenter is located on the right and the Convention Center is one block further south. From I-10 West take I-35 North and follow the directions above. From I-10 East take I-37 North to the Commerce St. exit. Drive west on Commerce St. for three blocks. The Marriott Rivercenter is on the right and the Convention Center is one block south further south.

Railway Transportation: For information about AMTRAK call 800-872-7245.

Weather: January weather in San Antonio is generally mild. Normal daily maximum and minimum temperatures are 62°F (17°C) and 42°F (5°C). Average precipitation is about 1.5 inches.

How to Obtain Hotel Accommodations

Room Lottery: (See the *How to Register in Advance* section to learn how to qualify for this year's lottery.) Here are last year's winners:

Jeffrey Adler, Li Aihua, Mohammad K. Azarian, Nicole Betsinger, Harvey Blau, Jack Bookman, Cathy Carter, Wayne Cassel, Ellen Cunningham, Randy Crist, Laura Hegerle, Bill Heller, Gene Herman, Shirley Huffman, Erica Johnson, S. Karmakar, Harvey Keynes, Mauricio Mata, Michael Marcozzi, John W. Neuberger, Alice Schaffer, Anurag Singh, Jennifer Slimowitz, Darrin Spiegel

General Instructions: Participants must register in advance in order to obtain hotel accommodations through the Mathematics Meetings Service Bureau (MMSB). Special meeting rates at the hotels listed below can be obtained only by making reservations through the MMSB. Reservations mistakenly taken by hotels directly may be subject to an increased rate. Participants interested in suites are urged to call the hotels directly for details on configurations, prices, etc.; however, all hotel reservations can only be made by completing the Housing section of the **Advance Registration/Housing (ARH) Form** by **November 23**. Hotels will accept reservations, based on availability, directly after **December 23**.

$ Rates:

- subject to 15% sales/occupancy tax
- only certified students or unemployed mathematicians qualify for student rates
- see ARH Form for detailed rate structure of each property

$ Room Payments/Cancellations:

- all major credit cards
- personal checks with personal ID and/or credit card backup at all properties except the Red Roof Inn
- 72-hour cancellation policy for all hotels except both Marriotts and La Quinta (48 hours), Hilton, Red Roof, and Holiday Inn (4:00 p.m. on day of arrival), and Menger (24 hours)

$ Guarantee Requirements:

- one night deposit by check or
- credit card: VISA, MC, AMEX (cards may be charged one night deposit)

☎ Hotel Information:

- children free, where appropriate, in existing beds only
- limited availability of cribs, but provided free unless otherwise noted
- check-in: 3 or 4 p.m. / check-out: 11 a.m. or noon
- distances to north side (where sessions will be) of Henry B. Gonzales Convention Center (CC) indicated under each caption
- parking rates listed below are daily and include in/out privileges
- windows do not open in most hotels unless otherwise indicated
- hotels with no restaurant on property are located within 2 blocks from a restaurant

Special Services:

- all hotels, with the exception of historical hotels, are working toward being in compliance with the Americans with Disabilities Act (ADA); historic properties indicated, where applicable
- special needs should be clearly indicated on the ARH form
- nonsmoking rooms available at all properties

Deadlines:

- room lottery qualification: **November 9**
- reservations through MMSB: **November 23**
- changes/cancellations through MMSB: **December 11**
- convention rates **based on availability only** after December 23

Marriott Rivercenter (co-headquarters)

(.10 mile to CC)

101 Bowie Street
San Antonio, TX 78205
(210) 223-1000
single - $121, double - $135
student single/double - $95

restaurants; bars/lounges; indoor/outdoor pools; health club; business center; laundry room; connected to Rivercenter Mall; parking - $10 (self), $13 (valet); in all rooms – coffee maker, hair dryer, iron/ironing board, king or queen beds, desk, dataport; children under 18 years free

Marriott Riverwalk

(.06 mile to CC/across the street)

711 East Riverwalk
San Antonio, TX 78205
(210) 224-4555
single/double - $119
student single/double - $91

restaurant; bar/lounge; food court; laundry room; indoor/outdoor pool; health club; parking - $10 (self) & $13 (valet); in all rooms - coffee maker, hair dryer, iron/ironing board, king or double beds, desk, 2 telephones (not 2 lines), windows open; dataport; rooms facing the river have balconies; children under 18 years free

Hilton Palacio Del Rio

(.10 mile CC/across the street from the south side of CC/**location of MAA Board of Governors and AMS Council meetings**)

200 South Alamo
San Antonio, TX 78205-2711
(210) 222-1400
single/double - $119
student single/double - $109

restaurants; bars/lounges; gift shop; business center; laundry room; outdoor pool; fitness room; parking - $8.50 (self) & $19.50 (valet); in all rooms – king or double beds, iron/ironing board, hair dryer, coffee maker, king or double beds, desk, dataport, balcony; checkout penalty - $25; children under 18 years free

Ramada Emily Morgan

(.40 mile to CC)

705 E. Houston Street
San Antonio, TX 78205
(210) 225-8486
Single - $95, double - $105
Student single - $85, double - $95

Restaurant; bar/lounge; gift shop; outdoor pool; health club with dry saunas; parking - $8 (self); business center; in all rooms – hair dryer, coffee maker, iron/ironing board, dataport, desk, king or double beds; most rooms have jacuzzi tubs; rooms with jacuzzi tubs have refrigerators; children under 18 years free

The Menger

(.20 mile to CC)

204 Alamo Plaza
San Antonio, TX 78205
(210) 223-4361
single - $89, double - $99
student single - $79, double - $89

restaurant; bar/lounge; visitor center; outdoor heated pool; fitness center; spa; multiple gift shops; parking - $8 (self) & $12 (valet); in all rooms – king or 2 queen beds, iron/ironing board, hair dryer, windows open, dataport; king rooms very limited and are not wheelchair accessible; children under 18 years free; historical property

(Continued on next page)

How to Obtain Hotel Accommodations (Continued)

La Quinta Convention Center

(.10 mile to CC)

1001 East Commerce Street
San Antonio, TX 78205-3303
(210) 222-9181
single - $89, double - $99

complimentary continental breakfast; outdoor pool; free parking; in all rooms – coffee maker, dataport, king or double beds, windows open; children under 18 years free

The Crockett

(.20 mile to CC/behind the Alamo)

320 Bonham Street
San Antonio, TX 78205-2083
(210) 225-6500, (800) 292-1050
single/double - $85
student single/double - $75

restaurants; bar; outdoor pool; parking - $11 (valet); in all rooms - hair dryer, coffee maker, dataport, iron/ironing board, king or double beds; all children free (maximum of 4 persons in room); some double rooms have pull-out sofas; historical property

Holiday Inn Express & Suites

(.20 mile to CC)

524 S. St. Mary's Street
San Antonio, TX 78205
(210) 354-1333
single/double - $81
student single/double - $79

all suite hotel; 24-hour refreshment center; complimentary continental breakfast; outdoor pool; fitness center; business center; parking - $5 (self & valet); in all suites – microwave, dataport, refrigerator, wet bar, desk, coffee maker, iron/ironing board, king or 2 double beds, windows open; no charge for children or additional persons

Hampton Inn (Riverwalk Area)

(.30 mile to CC/2 blocks from Alamo, Riverwalk, and Rivercenter Mall)

414 Bowie Street
San Antonio, TX 78205
(210) 225-8500
single/double - $75
student single/double - $65

complimentary continental breakfast; complimentary 24-hour coffee/tea in lobby; outdoor pool; free parking; in all rooms – coffee maker, iron/ironing board, dataport, king or 2 double beds, some kings have sofa sleeper; children under 18 years free

Red Roof Inn

(.4 mile to CC/on trolley route)

1011 E. Houston Street
San Antonio, TX 78205
(210) 229-9973
single/double - $64.99

complimentary continental breakfast; outdoor pool; free parking; complimentary 24-hour coffee/tea in lobby; in all rooms – king or 2 double beds, dataport; children under 18 years free; **personal checks not accepted**

Alternative Housing

For your convenience, we also list the following inexpensive properties that can be called directly for reservations:

Days Inn / Downtowner Motel
(.30 mile from CC)
902 E. Houston Street
San Antonio, TX 78205
(210) 227-6233
(800) DAYS-INN

La Quinta Market Square
(1.5 miles to CC)
900 Dolorosa
San Antonio, TX 78207
(210) 271-0001
(800) 531-5900

Super 8 Motel
(1.2 miles to CC)
1614 N. St. Mary's
San Antonio, TX 78215
(210) 222-8833

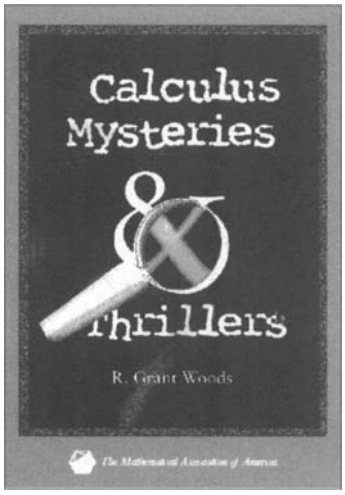
Attention Students!

As another alternative to housing choices listed above and for your convenience, we list a student hostel located in San Antonio:

San Antonio International AYH-Hostel
(2 miles to CC/on bus route)
621 Pierce Street
San Antonio, TX 78208
(210) 223-9426

Rates, including tax, are $14 per person for AYH members and $17 per person for nonmembers. There is an additional $10 refundable key fee. Please call the number listed above for further information.

THE MATHEMATICAL ASSOCIATION OF AMERICA



Calculus Mysteries and Thrillers

R. Grant Woods

Series: Classroom Resource Materials

Text Supplement

Calculus projects you can give to your students . . .

This book consists of eleven mathematics projects based on introductory single-variable calculus, together with some guidance on how to make use of them. Each project is presented as an amusing short story. In many of them a group of undergraduate mathematics students, formed into a consulting company called *Math Iz Us*, is hired to solve mathematical problems brought to them by clients. The problems solved include: helping to prosecute an accused pool shark, defending a driver accused of speeding, assisting a hockey coach in making his star forward a more effective goal scorer, and advising a pirate captain on how to divide a gold-plated goose-egg fairly among his crew.

In each problem, the problem solvers are required to present to their client a detailed written report of their findings. Thus, students must produce and analyze accurate mathematical models of complex, verbally presented "real life" situations, and write a clear technical account of their solution.

Instructors who are looking for problems that are novel, interesting, and several levels more complex than the typical text book "word problem" will find them in this book. It will be of particular value to instructors who wish to combine training in applications of calculus with training in technical writing. The complexity of the problems makes them suitable for use as group projects.

The calculus concepts on which the problems are based include: tangent and normal lines, optimization by use of critical points, inverse trig functions, volumes of solids, surface area integrals, and modeling economic concepts using definite integrals. Although a few ideas from physics and economics are used in the problems, no prior knowledge of these fields is required.

Catalog Code: CTM/JR
144 pp., Paperbound, 1998, ISBN 0-88385-711-1
List: $24.95 MAA Member: $19.95

Phone in Your Order Now! ☎ *1-800-331-1622*

Monday – Friday 8:30 am – 5:00 pm FAX (301) 206-9789

or mail to: The Mathematical Association of America, PO Box 91112, Washington, DC 20090-1112

Shipping and Handling: Postage and handling are charged as follows: **USA orders (shipped via UPS):** $2.95 for the first book, and $1.00 for each additional book. **Canadian orders:** $4.50 for the first book and $1.50 for each additional book. Canadian orders will be shipped within 10 days of receipt of order via the fastest available route. We do not ship via UPS into Canada unless the customer specially requests this service. Canadian customers who request UPS shipment will be billed an additional 7% of their total order. **Overseas orders:** $3.50 per item ordered for books sent surface mail. Airmail service is available at a rate of $7.00 per book. Foreign orders must be paid in US dollars through a US bank or through a New York clearinghouse. Credit Card orders are accepted for all customers.

Name _____

Address _____

City _____ State _____ Zip _____

Phone _____

Qty.	Catalog Code	Price	Amount
_____	CTM/JR	_____	_____

All orders must be prepaid with the exception of books purchased for resale by bookstores and wholesalers.

Shipping & handling _____

TOTAL _____

Payment ☐ Check ☐ VISA ☐ MasterCard

Credit Card No. _____ Expires ___/___

Signature _____

San Antonio Advance Registration/Housing Form

Name _____

Mailing Address _____

_____

Telephone _____ Fax _____

Email Address _____

(Acknowledgment of this registration will be sent to the email address given here, unless you check the box to the right.)

Badge Information:

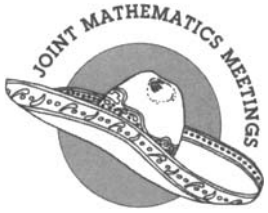
Name to appear on badge _____

Affiliation for badge _____

Nonmathematician guest badge _____
(please note charge below)

Membership
✓ all that apply

AMS	☐
ASL	☐
AWM	☐
CMS	☐
MAA	☐
NAM	☐



San Antonio ★ Texas
January 13-16, 1999

☐ **I DO NOT want my program and badge to be mailed to me on 12/9/98.**

☐ **I want acknowledgment of this registration sent by U.S. mail, not email.**

Registration Fees

Joint Meetings	**by Dec 21**	**at mtg**	**Subtotal**
☐ Member AMS, ASL, CMS, MAA	$160	$208	
☐ Nonmember	$248	$322	
☐ Graduate Student	$ 35	$ 45	
☐ Undergraduate	$ 20	$ 26	
☐ High School Student	$ 2	$ 5	
☐ Unemployed	$ 35	$ 45	
☐ Temporarily Employed	$120	$133	
☐ Developing Countries Special Rate	$ 35	$ 45	
☐ Emeritus Member of AMS or MAA	$ 35	$ 45	
☐ High School Teacher	$ 35	$ 45	
☐ Librarian	$ 35	$ 45	
☐ Nonmathematician Guest	$ 5	$ 5	
☐ Exhibitor	$ 0	$ 0	

$ _____

AMS Short Course on *Nonlinear Control (1/11-1/12)*

☐ Member, Nonmember	$ 80	$ 95	
☐ Student, Unemployed, Emeritus	$ 35	$ 45	

$ _____

MAA Short Course on *Mathematics in Finance (1/11-1/12)*

☐ Member of MAA	$125	$140	
☐ Nonmember	$175	$190	
☐ Student, Unemployed, Emeritus	$ 50	$ 60	

$ _____

MAA Minicourses (see listing on facing page)

I would like to attend: ☐ One Minicourse ☐ Two Minicourses
Please enroll me in MAA Minicourse(s) #_____ and/or #_____
In order of preference, my alternatives are: #_____ and/or #_____
Prices: $55 for Minicourses # 1, 3, 4, 6, 7, 8, 10, 12, 13, 15, 16
$75 for Minicourses # 2, 5, 9, 11, 14 (computer)

$ _____

Employment Register

Applicant résumé forms and employer job listing forms will be on e-MATH and in *Notices* in September and in *Focus* in October.

Employer—First Table	$200	$250
☐ Regular ☐ Self-scheduled ☐ Information Table		
Employer—Second Table	$ 50	$ 75
☐ Regular ☐ Self-scheduled ☐ Information Table		
☐ Employer—Posting Only	$ 50	N/A
☐ Applicant	$ 40	$ 75

$ _____

Events with Tickets	**Price Per**
AMS Banquet #___Regular #___Veg #___Kosher	$ 39
MER Banquet #___Regular #___Veg #___Kosher	$ 39
NAM Banquet #___Regular #___Veg #___Kosher	$ 39

$ _____

Student Activities (no charge):
☐ Mathchats

Total of Fees for Registrations & Events : $ _____

Payment

Registration & Event Total (total from other column) $ _____

Hotel deposit (only if paying by check) $ _____

Total Amount To Be Paid $ _____

(Note: A $5 processing fee will be charged for each returned check or invalid credit card.)

Method of Payment

☐ Check. Make checks payable to the AMS. Checks drawn on foreign banks must be in equivalent foreign currency at current exchange rates.
☐ Credit Card. VISA, MasterCard, AMEX, Discover (no others accepted).

Card number: _____

Exp. date: _____ Zipcode of credit card billing address: _____

Signature: _____

Name on card: _____

☐ Purchase order # _____ (please enclose copy)

Registration for the Joint Meetings is not required for the Short Courses, but it is required for the Minicourses and the Employment Register.

Other Information

Mathematical Reviews field of interest # _____

How did you hear about this meeting? Check one:
☐ *Focus* ☐ *Notices* ☐ WWW ☐ Colleague(s) ☐ Special mailing

☐ I am a mathematics department chair.

☐ Please do not include my name on any promotional mailing list.

☐ Please ✓ this box if you have a disability requiring special services.

Mail to:

Mathematics Meetings Service Bureau (MMSB)
P. O. Box 6887
Providence, RI 02940-6887
Fax: 401-455-4004
Questions/changes call: 401-455-4143 or 1-800-321-4267 x4143

Deadlines

For room lottery and/or résumés/job descriptions printed in the *Winter Lists*, return this form by:	**Nov. 9, 1998**
For housing reservations, badges/programs mailed:	**Nov. 23, 1998**
For housing changes/cancellations through MMSB:	**Dec. 11, 1998**
For advance registration for the Joint Meetings, Employment Register, Short Courses, MAA Minicourses, & banquets:	**Dec. 21, 1998**
For 50% refund on banquets, cancel by:	**Dec. 30, 1998***
For 50% refund on advance registration, Minicourses & Short Courses, cancel by:	**Jan. 9, 1999***

***no refunds after this date**

Hotel Reservations

To ensure accurate assignments, please rank hotels in order of preference by writing 1, 2, 3, etc., in the spaces at the left of the form and by circling the requested room type and rate. If the rate or the hotel requested is no longer available, you will be assigned a room at a ranked or unranked hotel at a comparable rate. Participants are urged to call the hotels directly for details on suite configurations, sizes, etc. Reservations at the following hotels must be made through the MMSB to receive the convention rates listed. All rates are subject to a 15% sales occupancy tax. **Guarantee requirements: First night deposit by check (add to payment on reverse of form) or a credit card guarantee.**

☐ Deposit enclosed ☐ Hold with my credit card Card Number_____ Exp. Date _____ Signature _____

Date and Time of Arrival _____ **Date and Time of Departure** _____

Name of Other Room Occupant _____ **Arrival Date** _____ **Departure Date** _____ **Spouse** ☐ **Child** ____ **(give age)**

Order of choice	Hotel	Single	Double 1 bed	Double 2 beds	Triple 2 beds	Triple 2 beds w/cot	Quad 2 beds	Quad 2 beds w/cot	Suites Starting rates
	Marriott Rivercenter (co-headquarters)*	$121	$135	$135	$150	$150	$165	$165	$400
	Students	$95	$95	$95	$110	$110	$125	$125	N/A
4	**Marriott Riverwalk (co-headquarters)***	$119	$119	$119	$134	$134	$149	$149	$500
	Students	$91	$91	$91	$106	$106	$121	$121	N/A
3	**Hilton Palacio del Rio**	$119	$119	$119	$139	$159**	$159	N/A	$500
	Students	$109	$109	$109	$129	$149**	$149	N/A	N/A
6	**Ramada Emily Morgan Hotel**	$95	$105	$105	$115	$125	$125	$135	N/A
	Students	$85	$95	$95	$105	$115	$115	$125	N/A
2	**The Menger**	$89	$99	$99	$99	$99	$99	$99	$186
	Students	$79	$89	$89	$89	$89	$89	$89	N/A
5	**La Quinta Convention Center**	$89	$99	$99	$109	$119	$109	$119	N/A
1	**The Crockett Hotel**	$85	$85	$85	$95	$105**	$95	$105**	$149
	Students	$75	$75	$75	$85	$95**	$85	$95**	N/A
7	**Holiday Inn Express Hotel & Suites**	$81	$81	$81	$81	N/A	$81	N/A	all suites
	Students	$79	$79	$79	$79	N/A	$79	N/A	N/A
8	**Hampton Inn**	$75	$75	$75	$75	$85	$75	$85	N/A
	Students	$65	$65	$65	$65	$75	$65	$75	N/A
	Red Roof Inn	$64.99	$64.99	$64.99	$64.99	$69.99	$64.99	$69.99	N/A

***Please note that the AMS Council and MAA Board of Governors will meet at the Hilton, NOT at the co-headquarters hotels. Please check updated announcements and schedules for locations of other committee meetings.**

****Limited Availability**

Special Housing Requests:.

☐ I have disabilities as defined by the ADA that require a sleeping room that is accessible to the physically challenged. My needs are: _____

☐ Other requests: _____

☐ If you are a member of a hotel frequent-travel club and would like to receive appropriate credit, please include the hotel chain and card number here: _____

If you are not making a reservation, please check off one of the following:

☐ I plan to make a reservation at a later date.

☐ I will be making my own reservations at a hotel not listed. Name of hotel: _____

☐ I live in the area or will be staying privately with family or friends.

☐ I plan to share a room with _____, who is making reservations.

THE MATHEMATICAL ASSOCIATION OF AMERICA

Combinatorics

A Problem Oriented Approach

Daniel Marcus

Series: Classroom Resource Materials

Textbook

Leads students quickly to the key ideas of combinatorics in a logical and proactive way . . .

This book teaches the art of enumeration, or counting, by leading the reader through a series of carfully chosen problems that are arranged strategically to introduce concepts in a logical order and in a provocative way.

The format is unique in that it combines features of a traditional textbook with those of a problem book. It is organized in eight sections, the first four of which cover the basic combinatorial entities of strings, combinations, distributions and partitions. The last four cover the special counting methods of inclusion and exclusion, recurrence relations, generating functions, and the method of Pólya and Redfield that can be characterized as "counting modulo symmetry." The subject matter is presented through a series of approximately 250 problems with connecting text where appropriate, and is supplemented by approximately 220 additional problems for homework assignments. Many applications to probability are included throughout the book.

While intended primarily for use as a text for a college-level course taken by mathematics, computer science and engineering students, the book is suitable as well for a general education course at a good liberal arts college, or for self-study.

Catalog Code: CMB/JR
156 pp., Paperbound, 1998, ISBN 0-88385-708-1
List: $28.00 MAA Member: $22.50
Solutions manual available with adoption orders.
Call 1-800-331-1622

Phone in Your Order Now! ☎ *1-800-331-1622*

Monday – Friday 8:30 am – 5:00 pm FAX (301) 206-9789
or mail to: The Mathematical Association of America, PO Box 91112, Washington, DC 20090-1112

Shipping and Handling: Postage and handling are charged as follows: **USA orders (shipped via UPS):** $2.95 for the first book, and $1.00 for each additional book. **Canadian orders:** $4.50 for the first book and $1.50 for each additional book. Canadian orders will be shipped within 10 days of receipt of order via the fastest available route. We do not ship via UPS into Canada unless the customer specially requests this service. Canadian customers who request UPS shipment will be billed an additional 7% of their total order **Overseas orders:** $3.50 per item ordered for books sent surface mail. Airmail service is available at a rate of $7.00 per book. Foreign orders must be paid in US dollars through a US bank or through a New York clearinghouse. Credit Card orders are accepted for all customers.

Name _____

Address _____

City _____ State _____ Zip _____

Phone _____

Qty.	Catalog Code	Price	Amount
_____	CMB/JR	_____	_____

All orders must be prepaid with the exception of books purchased for resale by bookstores and wholesalers.

Shipping & handling _____
TOTAL _____

Payment ☐ Check ☐ VISA ☐ MasterCard
Credit Card No. _____ Expires ___/___
Signature _____

EMPLOYMENT OPPORTUNITIES

ILLINOIS

UNIVERSITY OF ILLINOIS at CHICAGO
The Department of Mathematics, Statistics, and Computer Science

The Department has active research programs in all areas of pure mathematics, computational and applied mathematics, combinatorics and computer science, statistics, and mathematics education. See **http://www.math.uic.edu** for more information. Applications are invited for the following positions, effective August 21, 1999. First, a **tenure track or tenured position.** Candidates in all areas of interest to the Department will be considered. The position is initially budgeted at the **Assistant Professor** level, but candidates with a sufficiently outstanding research record may be considered at higher levels. Applicants must have a Ph.D. or equivalent degree in mathematics, computer science, statistics, mathematics education or related field, an outstanding research record, and evidence of strong teaching ability. Salary negotiable. Second, a **Research Assistant Professorship**. This is a non-tenure track position normally renewable annually to a maximum of three years. The position carries a teaching load of one course per semester, with the requirement that the incumbent play a significant role in the research life of the Department. The salary for AY 99-2000 for this position is expected to be $40,000. Applicants must have a Ph.D. or equivalent degree in mathematics, computer science, statistics, mathematics education or related field, and evidence of outstanding research potential. We encourage applicants to submit an electronic cover sheet. The electronic cover sheets may be filled out on the web at **www.phds.org** or may be obtained by sending an e-mail to the address **coversheet@phds.org.** However, for this search we still require that an original paper application must also be submitted. Send vita and direct 3 letters of recommendation, indicating the position being applied for, to **Henri Gillet, Head; Dept. of Mathematics, Statistics, and Computer Science; University of Illinois at Chicago; 851 S. Morgan (M/C 249); Chicago, IL 60607.**

To ensure full consider`ation, materials must be received by **December 21, 1998**. Minorities, persons with disabilities, and women are particularly encouraged to apply. UIC is an AA/EOE employer.

MICHIGAN

GRAND VALLEY STATE UNIVERSITY

An institution committed to teaching excellence, solicits applications for a tenure-track assistant professorship to begin August, 1999. Responsibilities include teaching mathematics courses at all levels, maintaining an active program of professional development, advising students, and engaging in departmental service.

The successful candidate will have a Ph. D. in Mathematics, or related field; demonstrated excellence in teaching undergraduate mathematics; strong teaching recommendations; commitment to continued scholarly and professional growth; demonstrated scholarly interest in an area of mathematics amenable to undergraduate research; and a demonstrated interest in teaching calculus, and one of precalculus mathematics or elementary mathematics education.

A complete application must include: (i) a cover letter; (ii) a vita; (iii) a copy of graduate transcripts; (iv) at least three letters of recommendation, with at least two attesting to the applicant's teaching ability and potential; (v) a personal statement that addresses the applicant's qualifications for the position; and (vi) a personal statement that addresses the applicant's teaching philosophy and methodology. Send these materials to:

Mathematics Search Committee
Department of Mathematics & Statistics
Grand Valley State University
Allendale, MI 49401-9403

For more information, see our Department Web Site: www.gvsu.edu/mathstat.

NEW JERSEY

EDUCATIONAL TESTING SERVICE
Associate Examiner

Educational Testing Service (ETS) is the nation's leading educational assessment organization and a leader in education research. We develop and administer achievement, occupational, and admission tests, such as the SAT for the College Board, for clients in education, government, and business. We have an excellent opportunity for an Associate Examiner at our corporate offices located in Princeton, New Jersey.

Responsibilities include developing, assembling and critically reviewing mathematics tests by involvement with the tests development process from inception through final printing and post-administration follow-up. Specifically, you will research and write items for the GRE, GMAT, PRAXIS, SAT and AP programs, recommend resolutions for problems with test items, and develop test-related surveys and studies. A Master's degree in Mathematics and 4 years of related work experience is required. Teaching at the college level would be an asset.

ETS offers competitive salaries, an excellent benefits package, and an ideal environment for professional growth. Please send resume, along with cover letter which MUST state salary requirement, to Bert D. Newton, Educational Testing Service, Rosedale Road, Princeton, NJ 08541, FAX to (609) 497-6022, or via Internet to bnewton@ets.org. We regret we are unable to respond to each resume. Only those selected for an interview will be contacted. We are dedicated to Equal Opportunity/Affirmative Action in the workplace. www.ets.org.

NEW YORK

BARUCH COLLEGE
Department of Mathematics

Tenure-track Assistant Professor position in the Mathematics Department beginning September, 1999. Duties include research, teaching, and service. Highest priority will be given to applicants with expertise in areas of mathematics related to business, including stochastic partial differential equations, mathematical probability and statistics, numerical methods, and operations research. Ideally, candidates should have some experience applying their education and research to the mathematics of finance. A Ph.D. is required for an appointment as an Assistant Professor.

The salary range is $40,440 – $52,213, depending on qualifications and experience. Baruch College is a senior college of the City University of New York located in the historic Gramercy Park area of Manhattan and has an enrollment of approximately 15,000 undergraduate and graduate students in its three schools. Send curriculum vitae, the names of 3 references, and copies of publications by November 15, 1998, to Warren B. Gordon, Chair, Mathematics Dept, Baruch College, CUNY, Box G0930, 17 Lexington Ave, New York, NY 10010. An Equal Opportunity/Affirmative Action, IRCA/Americans with Disability Act Employer.

NORTH CAROLINA

DAVIDSON COLLEGE

Applications are invited for a regular appointment in the Mathematics Department, with an initial two-year appointment at the Assistant Professor level to begin August 1, 1999. Consult the "Information for Applicants for Faculty Position" link at http://

www.davidson.edu/academic/math/math.html.

Davidson College is an Equal Opportunity Employer; women and minorities are encouraged to apply.

OHIO

OBERLIN COLLEGE
Department of Mathematics
Full-time, tenure-track position beginning the 1999–2000 academic year. Responsibilities include teaching undergraduate courses in statistics and mathematics (5/year), supervising honors students, and sustained scholarly production. Ph.D. degree in Statistics or Mathematics (in hand or expected by August 31, 1999) required. All research specialties in statistics and related fields considered. Candidates must demonstrate potential excellence in teaching. Send letter of application, curriculum vitae, academic transcripts (graduate and undergraduate), and 3 letters of reference to Jeffrey Witmer, Department of Mathematics, Oberlin College, Oberlin, OH 44074 by November 15, 1998. Oberlin College admitted women since its founding in 1833 and has been historically a leader in the education of blacks. AA/EOE.

TEXAS

TRINITY UNIVERSITY
The Department of Mathematics invites applications for two tenure-track positions at the assistant professor level starting in August 1999. Excellence in teaching is essential, and strong potential in research is expected. Exceptional candidates in any area of mathematics will be considered. However, the department is particularly interested in Analysis for one position and discrete mathematics for the other position. Applicants should provide a curriculum vitae, three letters of reference, transcripts, and a professional statement describing their philosophy about both teaching and research. Applications received by December 4, 1998 will be given full consideration. Send all materials to: Chair of the Search Committee, Department of Mathematics, Trinity University, San Antonio, Texas 78212; Phone: (210) 736-8205, e-mail: math@trinity.edu.

National Meetings

January 13–16, 1999 82nd Annual Meeting, San Antonio, TX; Board of Governors January 12, 1999

January 19–22, 2000 83rd Annual Meeting, Washington, DC; Board of Governors January 18, 2000

January 10–13, 2001 84th Annual Meeting, New Orleans, LA; Board of Governors January 9, 2001

Section Meetings

Eastern PA & Delaware November 7, 1998, Lehigh University, Bethlehem, PA

Indiana November 7, 1998, St. Mary's College, Notre Dame, IN

MD-DC-VA November 13-14, 1998, Towson University, Towson, MD

New Jersey November 1, 1998, Stevens Institute of Technology, Hoboken, NJ

North Central October 23-24, 1998, Concordia College, Moorhead, MN

Northeastern November 20-21, 1998, Western CT State University, Danbury, CT

Seaway November 6–7, 1998, Nazareth College, Rochester, NY

Southern California October 17, 1998, Pepperdine University, Malibu, CA

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TEXAS INSTRUMENTS

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