Letter

Contents

Dear Colleagues, Students, and Friends,

Welcome to MathFest 2005! Albuquerque is a spectacular setting for MathFest and this year's program is packed with mathematical addresses and a variety of education and curricular sessions. Your social calendar will be brimming with fun events such as the Los Amigos Roundup and the Santa Fe Scenic Tour & Shopping Extravaganza, so you'll have to plan ahead to squeeze in a trip to Old Towne Albuquerque on our courtesy shuttle. MathFest is a casual meeting where you will be able to visit with your colleagues in a relaxed and informal setting; and you can meet our newest colleagues who have been selected as this year's Project NExT Fellows.

The prestigious Hedrick Lectures will be given by Jeffrey Lagarias, and William Yslas Velez will deliver the James R.C. Leitzel Lecture. Invited addresses such as these are held sequentially in the morning, but in the afternoon you will be in the difficult position of choosing from a variety of contributed paper sessions, minicourses, special programs, and student activities.

Highlights of the full program for students include the popular J. Sutherland Frame Lecture by Arthur T. Benjamin, and the MAA Student Lecture by Annalisa Crannell.

In between all the events you'll have plenty of opportunity to talk to colleagues and explore Albuquerque and the surrounding areas. Check the registration area for information about local sights and popular restaurants. Don't forget to visit the MathFest Exhibit Hall in Ballroom A of the Albuquerque Convention Center, which will feature a wide selection of publications and technology in the field of mathematics.

Our celebration of mathematics and mathematicians begins at the Opening Banquet on Wednesday, August 3rd at 6:30 pm with Joe Gallian as our featured speaker. I hope to see you there!

Carl C Cowen

President
The Mathematical Association of America

Schedule of Events

11:00 am – 7:00 pm	**PROJECT NEXT REGISTRATION**	**Dane Smith Hall, Level 1, UNM**
1:30 pm – 9:00 pm	**PROJECT NEXT WORKSHOP** (for 2005-2006 Fellows)	**Dane Smith Hall, Level 1, UNM**

8:00 am – 5:00 pm	**PROJECT NEXT REGISTRATION**	**Dane Smith Hall, Level 1, UNM**
8:30 am – 5:25 pm	**PROJECT NEXT WORKSHOP** (for 2005-2006 Fellows)	**Dane Smith Hall, Level 1, UNM**
9:00 am – 5:00 pm	**SPECIAL PROGRAM** **PART 1: TWO-DAY SHORT COURSE** **RECREATIONAL MATHEMATICS: A SHORT COURSE IN HONOR OF THE 300TH BIRTHDAY OF BENJAMIN FRANKLIN** Paul C. Pasles, Villanova University	**Enchantment Ballroom A/B, Hyatt**
9:00 am	**INTRODUCTION** Paul C. Pasles, Villanova University	**Enchantment Ballroom A/B, Hyatt**
10:10 am	**MAGIC SQUARE MAGIC** Art Benjamin, Harvey Mudd College	**Enchantment Ballroom A/B, Hyatt**
1:30 pm	**DÜRER'S MAGIC SQUARE, CARDANO'S RINGS, PRINCE RUPERT'S CUBE, AND OTHER NEAT THINGS** V. Frederick Rickey, United States Military Academy	**Enchantment Ballroom A/B, Hyatt**
3:10 pm	**PROBLEM SOLVING THROUGH RECREATIONAL MATHEMATICS** Orin Chein, Temple University	**Enchantment Ballroom A/B, Hyatt**

8:00 am – 5:00 pm	**MAA BOARD OF GOVERNORS**	**Grand Pavilion, Hyatt**
8:00 am – 5:00 pm	**PROJECT NEXT REGISTRATION**	**UNM, Dane Smith Hall, Level 1**
8:15 am – 5:45 pm	**PROJECT NEXT WORKSHOP** (for 2005-2006 Fellows)	**UNM, Dane Smith Hall, Level 1**
9:00 am – 4:00 pm	**SANTA FE SCENIC TOUR AND SHOPPING EXTRAVAGANZA**	
9:00 am – 5:00 pm	**SPECIAL PROGRAM** **PART 2: TWO-DAY SHORT COURSE** **PROBLEM SOLVING THROUGH RECREATIONAL MATHEMATICS, CONTINUED** Orin Chein, Temple University	**Enchantment Ballroom A/B, Hyatt**

10:40 am	**OVER THIRTY YEARS OF ALPHAMETRICS IN THE JOURNAL OF RECREATIONAL MATHEMATICS** Charles Ashbacher, Editor, Journal of Recreastional Mathematics	**Enchantment Ballroom A/B, Hyatt**
1:30 pm	**HOW TO CHANGE COINS, M&M'S, OR CHICKEN NUGGETS: THE LINEAR DIOPHANTINE PROBLEM OF FROBENIUS** Matthias Beck, San Francisco State University	**Enchantment Ballroom A/B, Hyatt**
2:45 pm	**MAGIC SQUARES IN THE TWENTY-FIRST CENTURY** Maya Mohsin Ahmad, University of California-Davis	**Enchantment Ballroom A/B, Hyatt**
Noon – 7:00 pm	**MATHFEST REGISTRATION**	**Ballroom A Foyer, ACC**
5:30 pm – 6:30 pm	**MAA/PI MU EPSILON STUDENT RECEPTION**	**Fiesta 1, Hyatt**
6:30 pm – 7:30 pm	**OPENING RECEPTION**	**Pavilion Court, Hyatt**
7:30 pm – 9:30 pm	**OPENING BANQUET** Speaker: Joe Gallian, University of Minnesota-Duluth Emcee: Annalisa Crannell, Franklin and Marshall College	**Grand Pavilion, Hyatt**

THURSDAY, AUGUST 4TH

8:00 am – 4:00 pm	**MATHFEST REGISTRATION**	**Ballroom A Foyer, ACC**
8:30 am – 9:20 am	**MAA INVITED ADDRESS** **CALCULUS TEXTS** Underwood Dudley, Florida State University	**Ballroom C, ACC**
9:00 am – 5:00 pm	**EXHIBITS AND BOOK SALES**	**Ballroom A, ACC**
9:00 am – 5:00 pm	**EMAIL LAB**	**Ballroom A, ACC**
9:00 am – 5:00 pm	**STUDENT HOSPITALITY CENTER**	**Ballroom A, ACC**
9:30 am – 10:20 am	**HEDRICK LECTURE SERIES CRYSTALS, TILINGS, AND PACKINGS** **LECTURE 1: MATHEMATICAL CRYSTALS AND QUASI CRYSTALS** Jeffrey Lagarias, University of Michigan	**Ballroom C, ACC**
10:30 am – 11:20 am	**MAA INVITED ADDRESS** **GRAPHS, TREES, PEBBLES, AND ROBOTS** Ruth Haas, Smith College	**Ballroom C, ACC**
12:00 pm – 2:20 pm	**PANELS AND OTHER SESSIONS** **WORKSHOP ON TRAINING T.A.'s** David Manderscheid, University of Iowa Maria Terrell, Cornell University Sol Friedberg, Boston College	**Acoma, ACC**

ACC = Albuquerque Convention Center • UNM = University of New Mexico

Schedule of Events

1:00 pm – 2:20 pm	**PANELS AND OTHER SESSIONS** **TOWN MEETING ON COLLEGE CALCULUS:** **RESPONDING TO CHANGING DEMOGRAPHICS** David Bressoud, Macalester College Susan Ganter, Clemson University Michael Starbird, University of Texas	Mesilla, ACC
1:00 pm – 2:20 pm	**PANELS AND OTHER SESSIONS** **SUMMA SPECIAL SESSION ON MAA STUDENT** **RESEARCH PROGRAMS** William Hawkins, Jr., MAA and University of the District of Columbia, and Robert Megginson, University of Michigan	San Miguel, ACC
1:00 pm – 2:55 pm	**MAA STUDENT PAPER SESSION #1**	Taos, ACC
1:00 pm – 2:55 pm	**MAA STUDENT PAPER SESSION #2**	Cochiti, ACC
1:00 pm – 2:55 pm	**PME STUDENT PAPER SESSION #1**	Picuris, ACC
1:00 pm – 2:55 pm	**PME STUDENT PAPER SESSION #2**	Santa Ana, ACC
1:00 pm – 3:00 pm	**MAA CONTRIBUTED PAPER** **SESSION, PART I** **USES OF THE WORLD-WIDE WEB THAT ENRICH** **AND PROMOTE LEARNING, PART I** Kirby Baker, UCLA Roger Nelson, Ball State University	Aztec, ACC

1:00 pm	**NEW FEATURES IN MATHDL** David Smith, Duke University
1:20 pm	**A MATH GATEWAY UPDATE** Lang Moore, Duke University
1:40 pm	**INTEGRATING MATHML AND SVG IN MOODLE** **AND ELSEWHERE** Peter Jipsen, Chapman University
2:00 pm	**EVALUATION INSTRUMENTS FOR INTERNET-BASED** **COURSES** Thomas Banchoff, Brown University
2:20 pm	**ASSESSING WITH CAS-BASED WEB TOOLS** Calvin Armstrong, Appleby College
2:40 pm	**ONLINE QUIZZING USING WEB CT** P. Perry, Hawaii Pacific University

1:00 pm – 3:00 pm	**MINICOURSE #1: PART 1**	**Pecos, ACC**
	TEACHING A COURSE IN THE HISTORY OF MATHEMATICS	
	V. Frederick Rickey, U.S. Military Academy	
	Victor Katz, University of the District of Columbia	
1:00 pm – 3:00 pm	**MINICOURSE #2: PART 1**	**Ruidoso, ACC**
	MATHEMATICAL FINANCE	
	Walter Stromquist, Bryn Mawr College	
1:00 pm – 3:00 pm	**GENERAL CONTRIBUTED PAPER SESSION, PART I**	**Doña Ana, ACC**
	Shawnee McMurran, California Sate University	
	Sarah Mabrouk, Framingham State College	

1:00 pm	**WHICH BALLPARKS ARE HOMER FRIENDLY?**	
	Howard Penn, United States Naval Academy	
1:20 pm	**TEACHING AN ONLINE COURSE — A FIRST EXPERIENCE**	
	Sarah Mabrouk, Framingham State College	
1:40 pm	**LESSONS LEARNED IN CREATING GIRLS' MATH CLUBS**	
	Jerry Dwyer, Texas Tech University	
2:00 pm	**TEACHERS IN TRIGONOMETRY — WHAT'S IMPORTANT?**	
	Susan Pustejovsky, Alverno College	
2:15 pm	**LESSONS TAUGHT AND LESSONS LEARNED**	
	Janet Nichols, Colorado State University Pueblo	
2:30 pm	**IMPLEMENTING THOUGHT REVEALING MATHEMATICS TASKS**	
	Sandra Richardson, Lamar University	
2:45 pm	**AN INTEGRATED MATH AND PHILOSOPHY OF SCIENCE COURSE**	
	Mike Pinter, Belmont University	

1:00 pm – 3:20 pm	**MAA CONTRIBUTED PAPER SESSION**	**Brazos, ACC**
	ENVIRONMENTAL MATHEMATICS	
	Ben Fusaro, Florida State University and Bill Stone,	
	New Mexico Institute of Mining & Technology	

1:00 pm	**MODELING WITH DYNAMIC SYSTEMS**	
	Jim Brandt, Prescott College	
1:20 pm	**EXTENSIONS OF DAISY WORLD**	
	David Gurney, Southeastern Louisiana University	
1:40 pm	**WASTE ACCUMULATION AND DECAY OF RESOURCES**	
	Joe Harris, St. Andrews Presbyterian College	

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2:00 pm	**DEVELOPING MATHEMATICAL PROBLEMS FOR PHARMACY STUDENTS USING ALZHEIMER'S DISEASE MODELS** Magdalena Luca, Massachusetts College of Pharmacy & Health Sciences	
2:20 pm	**MATRIX METHODS IN ELEMENTARY CHEMISTRY** George Rublein, College of William and Mary	
2:40 pm	**ECOSYSTEM SIMULATIONS ON THE GRAPHING CALCULATOR** Robb Sinn, North Georgia College & State University	
3:00 pm	**USING LARGE AMOUNTS OF DATA ON COASTAL PHENOMENA** G. Zimmer, Texas A & M University	
1:00 pm – 4:00 pm	**INVITED PAPER SESSION** **DOUBLE BUBBLES IN S^n AND GAUSS SPACE** Frank Morgan, Williams College	Jemez/Isleta, ACC
1:00 pm	**DOUBLE BUBBLES** Frank Morgan, Williams College	
1:20 pm	**DOUBLE BUBBLES IN S^n** David Freeman, University of California, Berkeley	
1:40 pm	**MAA UNDERGRADUATE STUDENT SESSION ON ISOPERIMETRIC PROBLEMS IN GAUSS SPACE** Elizabeth Adams, Diana Davis, Michelle Lee, Williams College Regina Visocchi, Williams College and Michigan State University	
3:00 pm	**PROOF OF CURVATURE CONJECTURE** Marilyn Daily, Max Planck Institute, Potsdam	
1:00 pm – 5:00 pm	**MAA CONTRIBUTED PAPER SESSION** **CURRENT ISSUES IN MATHEMATICS EDUCATION COURSES** Carol Vobach, University of Houston-Downtown	La Cienega, ACC
1:00 pm	**ASSESSMENT FOR PRE-SERVICE TEACHERS** N. Leveille, University of Houston-Downtown	
1:15 pm	**A CURRICULUM AND ASSESSMENT COURSE FOR HS TEACHERS** B. Strassfeld, New York University	

1:30 pm	**TECHNOLOGY COURSE FOR PRE- AND IN-SERVICE TEACHERS** Paula Stickles, Indiana University
1:45 pm	**PARTNERSHIP GRANT FOR MG MATHEMATICS TEACHERS** Judy O'Neal, North Georgia College and State University
2:00 pm	**INFUSING WRITING TO PROMOTE STUDENTS' KNOWLEDGE OF MATHEMATICS FOR TEACHING** Donna Beers, Simmons College
2:15 pm	**INTEGRATING SERVICE LEARNING IN CLASSES FOR TEACHERS** John Hamman, AACC
2:30 pm	**CONNECTING MATHEMATICS AND PEDAGOGY** Ekaterina Lioutikova, Saint Joseph College
2:45 pm	**NSF'S MATH AND SCIENCE PARTNERSHIP PROGRAM** Diane Spresser, National Science Foundation
3:00 pm	**WHY ARE WE MATH MAJORS?** Jeff Johannes, SUNY-Geneseo
3:15 pm	**CAPSTONE COURSES FOR FUTURE MATHEMATICS TEACHERS** Matthew Winsor, University of Texas-El Paso
3:30 pm	**3M AT ULM** Brian Kelly, University of Louisiana-Monroe
3:45 pm	**A HIGH-TECH IN-SERVICE GRADUATE MATH COURSE** Archie Earl, Norfolk State University
4:00 pm	**A HANDS-ON UNIVERSITY CALCULUS COURSE FOR HS TEACHERS** Patricia Baggett, New Mexico State University
4:15 pm	**SYMBIOSIS OF MATHEMATICIAN AND CLASSROOM TEACHER** Ted Gamelin, UCLA
4:30 pm	**SUPPORTING TEACHERS OF ENGLISH LANGUAGE LEARNERS** Elizabeth Burroughs, Humboldt State University
4:45 pm	**HOW TO HELP ENGLISH LANGUAGE LEARNERS SUCCEED** Joyce Fischer, Texas State University-San Marcos

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Schedule of Events

1:00 pm - 5:00 pm	**PROJECT NEXT (Invited Fellows)**	Zuni, ACC
1:00 pm - 5:00 pm	**PROJECT NEXT (Invited Fellows)**	Sandia, ACC
1:00 pm - 5:00 pm	**PROJECT NEXT (Invited Fellows)**	Laguna, ACC
1:00 pm - 5:00 pm	**PROJECT NEXT (Invited Fellows)**	Santo Domingo, ACC
1:30 pm - 6:30 pm	**INVITED PAPER SESSION**	Galisteo, ACC

INVITED PAPER SESSION
THE MANY BRANCHES OF DYNAMICAL SYSTEMS
Mario Martelli, Claremont-McKenna College

1:30 pm **RINGS AND SATELLITES AROUND THE MCMULLEN DOMAIN**
Robert Devaney, Boston University

2:00 pm **HIGH DIMENSIONAL DYNAMICS OF CONTINUOUS AND DISCRETE SYSTEMS REDUCED TO LOW DIMENSIONAL DYNAMICS OF MAPPINGS**
Hal Smith, Arizona State University

2:30 pm **QUASI-CONTINUOUS DYNAMICAL SYSTEMS**
Annalisa Crannell, Franklin and Marshall College

3:00 pm **CHAOS THEORY AND EXPERIMENTS IN POPULATION DYNAMICS**
Jim Cushing, University of Arizona

3:30 pm **STOCHASTICALLY SELF-LIMITING GROWTH**
Ami Radunskaya, Pomona College

4:30 pm **DELAYED FEEDBACK AT STABILITY'S EDGE**
John Milton, Claremont McKenna, Pitzer, and Scripps Colleges

5:00 pm **NIM: A FINITE SHIFT REGISTER SEQUENCE**
Diana Thomas and Michael Jones, Montclair State University

5:30 pm **DEFINITE INTEGRALS AND DYNAMIC SPACE**
Victor Moll, Tulane University

6:00 pm **DYNAMICS OF THE DEGREE SIX LANDEN TRANSFORMATION**
Marc Chamberland, Grinnell College

2:30 pm - 3:50 pm	**PANELS AND OTHER SESSIONS** **LEAKS IN THE PIPELINE: WHERE OUR STUDENTS GO AND WHERE THEY DON'T** Sheldon P. Gordon, Farmingdale State University of New York	**Mesilla, ACC**
2:30 pm - 3:50 pm	**PANELS AND OTHER SESSIONS** **WHY OUR DEPARTMENTS ARE PROPOSING TO OFFER PILOT SECTIONS OF A MODELING BASED COLLEGE ALGEBRA COURSE** Bill Haver, Virginia Commonwealth University	**San Miguel, ACC**
2:30 pm - 5:00 pm	**SECTION OFFICERS MEETING**	**Grand Pavilion, Hyatt**
3:00 pm - 4:55 pm	**MAA STUDENT PAPER SESSION #3**	**Taos, ACC**
3:00 pm - 4:55 pm	**MAA STUDENT PAPER SESSION #4**	**Cochiti, ACC**
3:00 pm - 4:55 pm	**PME STUDENT PAPER SESSION #3**	**Picuris, ACC**
3:00 pm - 4:55 pm	**PME STUDENT PAPER SESSION #4**	**Santa Ana, ACC**
3:00 pm - 5:00 pm	**GRADUATE STUDENT PROGRAM** **GRADUATE STUDENT POSTER SESSION** John Vano, University of Wisconsin	**Nambé/Navajo, ACC**
3:15 pm – 5:00 pm	**GENERAL CONTRIBUTED PAPER SESSION, PART II** Shawnee McMurran, California State University, San Bernardino; Sarah Mabrouk, Framingham State College	**Doña Ana, ACC**

3:15 pm	**SOLVING GEOMETRY PROBLEMS THROUGH INQUIRY** Roxana Costinescu, Millersville University	
3:30 pm	**USING LINGUISTICS PROBLEMS TO TEACH MATH MODELING** William Mitchener, Duke University	
3:45 pm	**MODELING AN ASTHMA ATTACK: THE IMMUNE RESPONSE** David Quesada, Saint Thomas University	
4:00 pm	**THE NEW CLEP EXAM FOR PRECALCULUS CREDIT** Lisa Townsley, Benedictine University	
4:15 pm	**ON THE 'ALTERNATING EULER CONSTANT' LN(4/π)** Jonathan Sondow, Princeton University	

Schedule of Events

4:30 pm **IMPLICIT EQUATION OF CERTAIN PARAMETRIC SURFACES**
Haohao Wang, Southeast Missouri State University

4:45 pm **FAIRNESS, THE TALMUD, AND PASCAL**
John Maceli, Ithaca College

3:15 pm – 5:15 pm **MAA CONTRIBUTED PAPER SESSION** **Aztec, ACC**
INNOVATIVE MATHEMATICS MAJORS IN SMALL/MEDIUM DEPARTMENTS
Mike Axtell, Wabash College
Crista Coles, Elon University
Sylvia Forman, St. Joseph's University
David Mazur, Western New England College

3:15 pm **APPLIED MATH AND THE MAGIC OF DOUBLE MAJORS**
Kyle Riley, South Dakota School of Mines & Technology

3:35 pm **AN INTEGRATED APPLIED MATHEMATICS PROGRAM**
Mark Parker, Carroll College

3:55 pm **INTEGRATING MATH & SCIENCE FOR MATH MAJORS**
Jenna Carpenter, Louisiana Tech University

4:15 pm **EXPERIENCES IN ATTRACTING WOMEN TO MATHEMATICS**
Colm Mulcahy, Spelman College

4:35 pm **CHOICE OF TRACK WITH RESEARCH FOR ALL**
M. McKemie, St. Edwards University

4:55 pm **PRE-DOCTORAL MATHEMATICS MAJOR**
Joe Stickles, Jr., University of Evansville

3:15 pm – 5:15 pm **MINICOURSE #3: PART 1** **Pecos, ACC**
INFUSING CONNECTIONS INTO CORE COURSES FOR FUTURE SECONDARY TEACHERS
Steve R. Benson and Al Cucco, Education
Development Center; Karen J. Graham, University
of New Hampshire; Neil Portnoy, Stony Brook University

3:15 pm – 5:15 pm **MINICOURSE #4: PART 1** **Ruidoso, ACC**
THE MATHEMATICS OF PRESIDENTIAL AND OTHER ELECTIONS
Steven J. Brams, New York University

5:00 pm – 5:45 pm	**MATH HORIZONS SPECIAL STUDENT SESSION** Arthur T. Benjamin, Harvey Mudd College Jennifer J. Quinn, Occidental College	Taos, ACC
5:00 pm – 6:00 pm	**GRADUATE STUDENT RECEPTION**	Enchantment Ballroom E/F, Hyatt
5:30 pm – 9:00 pm	**LOS AMIGOS ROUNDUP** Shuttles begin at 5:30 pm and run continuously every 20 minutes.	Shuttle Stop at the Albuquerque Convention Center (3rd Street Entrance)

FRIDAY, AUGUST 5TH

8:00 am – 4:00 pm	**MATHFEST REGISTRATION**	Ballroom A Foyer, ACC
8:30 am – 9:20 am	**MAA-NAM DAVID BLACKWELL LECTURE** **MODELING THE PHARMACOKINETICS OF A CHEMICAL USED IN HOUSEHOLD CONSUMER PRODUCTS** Leona H. Clark, Bennett College for Women	Ballroom C, ACC
9:00 am – 5:00 pm	**EXHIBITS AND BOOK SALES**	Ballroom A, ACC
9:00 am – 5:00 pm	**EMAIL LAB**	Ballroom A, ACC
9:00 am – 5:00 pm	**STUDENT HOSPITALITY CENTER**	Ballroom A, ACC
9:30 am – 10:20 am	**HEDRICK LECTURE SERIES CRYSTALS, TILINGS, AND PACKINGS** **LECTURE 2: TILINGS WITH ONE TILE** Jeffrey Lagarias, University of Michigan	Ballroom C, ACC
10:30 am – 11:20 am	**JAMES R.C. LEITZEL LECTURE** **INCREASING THE NUMBER OF MATHEMATICS MAJORS: LESSONS LEARNED FROM WORKING WITH THE MINORITY COMMUNITY** William Yslas Vélez, University of Arizona	Ballroom C, ACC
11:30 am – Noon	**MAA PRIZE SESSION**	Ballroom C, ACC
1:00 pm – 2:20 pm	**GRADUATE STUDENT PROGRAM** **HOW TO APPLY FOR JOBS** David Manderscheid, University of Iowa	Jemez/Isleta, ACC
1:00 pm – 2:20 pm	**PANELS AND OTHER SESSIONS** **EFFECTIVE SYSTEMATIC CHANGE IN THE UNIVERSITY: FIVE-YEAR RESULTS FROM NSF HOUSTON-LOUIS STOKES**	Mesilla, ACC

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Schedule of Events

	ALLIANCE FOR MINORITY PARTICIPATION Martin V. Bonsangue, Cal State Fullerton David E. Drew, The Claremont Graduate University	
1:00 pm – 2:50 pm	**SIGMAA ON THE PHILOSOPHY OF MATHEMATICS** **GUEST LECTURE AND BUSINESS MEETING** Speakers: Reuben Hersh, University of New Mexico Bonnie Gold, Monmouth University	**Brazos, ACC**
1:00 pm – 2:55 pm	**MAA STUDENT PAPER SESSION #5**	**Taos, ACC**
1:00 pm – 2:55 pm	**MAA STUDENT PAPER SESSION #6**	**Cochiti, ACC**
1:00 pm – 2:55 pm	**PME STUDENT PAPER SESSION #5**	**Picuris, ACC**
1:00 pm – 2:55 pm	**PME STUDENT PAPER SESSION #6**	**Santa Ana, ACC**
1:00 pm - 3:00 pm	**INVITED PAPER SESSION** **TEACHING COMBINATORIAL MATHEMATICS** Alan Tucker, SUNY at Stony Brook	**Galisteo, ACC**

1:00 pm	**TEACHING COMBINATORICS TO FUTURE MATH TEACHERS** Richard Grassl, University of Northern Colorado
1:30 pm	**TEACHING COMBINATORICS IN DISCRETE MATH COURSES** David Bressoud, Macalester College
2:00 pm	**THOUGHTS ON TEACHING COMBINATORICS** Jack Graver, Syracuse University
2:30 pm	**HOW GEORGE POLYA TAUGHT ME TO TEACH COMBINATORICS** Alan Tucker, SUNY at Stony Brook

1:00 pm – 3:00 pm	**MAA CONTRIBUTED PAPER SESSION** **TEACHING AND LEARNING PROOF IN INQUIRY-BASED COURSES: INTEGRATING RESEARCH AND PRACTICE** Susan Hammond Marshall, Monmouth University Jennifer Christian Smith, University of Texas at Austin	**La Cienega, ACC**

1:00 pm	**TEACHING THE PROCESS OF MATHEMATICS** Walker White, Cornell University
1:15 pm	**LEARNING AND ASSESSMENT OF THE MATHEMATICAL PROOFS** Luz DeAlba, Drake University

1:30 pm	**SURPRISING EFFECTS OF INQUIRY BASED LEARNING** Jacqueline Jensen, Sam Houston State University	
1:45 pm	**INQUIRY-BASED GEOMETRY AND ABSTRACT ALGEBRA** Holly Zullo, Carroll College	
2:00 pm	**ASSESSMENT OF STUDENT LEARNING IN ABSTRACT ALGEBRA** Chang Beng, Portland State University	
2:15 pm	**ANALYSIS-THE ULTIMATE TRAINING GROUND** W. Mahavier, Lamar University	
2:30 pm	**APPROACHES TO PROOF CONSTRUCTION IN NUMBER THEORY** Sera Yoo, University of Texas-Austin	
2:45 pm	**A MODIFIED MOORE-METHOD NUMBER THEORY COURSE** Bonnie Gold, Monmouth University	
1:00 pm – 3:00 pm	**MAA CONTRIBUTED PAPER SESSION, PART II** **USES OF THE WORLD WIDE WEB THAT ENRICH AND PROMOTE LEARNING** Kirby Baker, UCLA Roger Nelson, Ball State University	**Aztec, ACC**
1:00 pm	**AN ENRICHED COURSE IN GEOMETRIC MODELING** David Finn, Rose-Hulman Institute of Technology	
1:20 pm	**THE CLASSROOM-FREE WEB-ONLY COURSE ENVIRONMENT** William Margolis	
1:40 pm	**USING CALCTOOL TO TEACH CALCULUS** James Rolf, U.S. Military Academy	
2:00 pm	**USING WEB-BASED SOFTWARE IN YOUR TEACHING TEAM** Carolyn Warren, Ole Miss	
2:20 pm	**COMBINING ON-LINE & CLASSROOM TEACHING IN ALGEBRA** Laura Schmidt, University of Wisconsin	

Schedule of Events

2:40 pm	**ONLINE TECHNOLOGY IN A LIBERAL ARTS MATH CLASS** Fred Butler, West Virginia University	
1:00 pm – 3:00 pm	**MAA GENERAL CONTRIBUTED PAPER SESSION, PART III** Shawnee McMurran, California Sate University Sarah Mabrouk, Framingham State College	Doña Ana, ACC
1:00 pm	**INFINITE SUMS IN STRING FIELD THEORY** Abdulmajeed Abdurrahman, Shippensburg University	
1:15 pm	**EXPLORATION, CONJECTURE AND PROOF** Ann Edlin, La Salle University	
1:30 pm	**GEOMETRY ON A HUBCAP** David Ewing, Central Missouri State University	
1:45 pm	**PROOF OF THE EXISTENCE OF A LIMIT** Bronislaw Czarnocha, CUNY, NYC, Brown University	
2:00 pm	**USING HISTORY TO TEACH MATHEMATICS WITH EXAMPLES** Jim Fulmer, University of Arkansas-Little Rock	
2:15 pm	**WIDENING THE AUDIENCE FOR DISCRETE MATHEMATICS** David Hunter, Westmont College	
2:30 pm	**A SELF-CONTAINED SHORT COURSE IN STATISTICS** Ron Barnes, University of Houston-Downtown Campus	
2:45 pm	**A COURSE ON THE MATHEMATICS OF VOTING & ELECTIONS** Jonathan Hodge, Grand Valley State University	
1:00 pm – 3:00 pm	**MINICOURSE #1: PART 2** **TEACHING A COURSE IN THE HISTORY OF MATHEMATICS** V. Frederick Rickey, U.S. Military Academy Victor Katz, University of the District of Columbia	Pecos, ACC
1:00 pm – 3:00 pm	**MINICOURSE #2: PART 2** **MATHEMATICAL FINANCE** Walter Stromquist, Bryn Mawr College	Ruidoso, ACC
1:00 pm - 3:00 pm	**INVITED PAPER SESSION** **GEMS OF NUMBER THEORY** Arthur T. Benjamin, Harvey Mudd College Ezra A. Brown, Virginia Polytechnic University	San Miguel, ACC

16

1:00 pm	**THE COLLATZ CHAMELEON** Marc Chamberland, Grinnell College	
1:30 pm	**A RATIONAL APPROACH TO IRRATIONALITY (OR, DIOPHANTINE APPROXIMATION FOR THE IMPATIENT)** Ed Burger, Williams College	
2:00 pm	**GREAT MOMENTS OF THE RIEMANN ZETA FUNCTION** Jennifer Beineke, Western New England College	
2:30 pm	**SOME VISUAL GEMS FROM ELEMENTARY NUMBER THEORY** Roger Nelson, Lewis and Clark Colleges	
1:00 pm - 5:00 pm	**PROJECT NEXT**	**Zuni, ACC**
1:00 pm - 5:00 pm	**PROJECT NEXT**	**Sandia, ACC**
1:00 pm - 5:00 pm	**PROJECT NEXT**	**Laguna, ACC**
1:00 pm - 5:00 pm	**PROJECT NEXT**	**Santo Domingo, ACC**
2:30 pm - 3:50 pm	**MAA CONTRIBUTED PAPER SESSION** **INNOVATIVE MATHEMATICS MAJORS IN SMALL/MEDIUM DEPARTMENTS** Mike Axtell, Wabash College Crista Coles, Elon University Sylvia Forman, St. Joseph's University David Mazur, Western New England College	**Jemez/Isleta, ACC**
2:30 pm	**THE MATHEMATICS MAJOR AT WALSH UNIVERSITY** Kai Brunkalla, Walsh University	
2:50 pm	**THE MATHEMATICAL SCIENCES IN THE LIBERAL ARTS** Christopher Brazfield, Lebanon Valley College	
3:15 pm	**A SEMINAR FOR MAJORS** Vadim Ponomarenko, Trinity University	
3:30 pm	**MATH MAJORS AT A "SCIENCE SERIOUS" LIBERAL ARTS COLLEGE** Lisa Townsley, Benedictine University	
3:50 pm	**A NEW COMPUTATIONAL MATHEMATICS MAJOR** Nirmal Devi, Embry Riddle Aeronautical University	
2:30 pm - 3:50 pm	**PANELS AND OTHER SESSIONS** **NATIONAL MATH VIEW: A LOOK AT STATE MATHEMATICAL STANDARDS** Johnny Lott, University of Montana	**Mesilla, ACC**

ACC = Albuquerque Convention Center • UNM = University of New Mexico

Schedule of Events

3:00 pm - 4:20 pm	**SIGMAA ON ENVIRONMENTAL MATHEMATICS** **CONVERSATIONS ABOUT MATHEMATICS AND THE ENVIRONMENT** Patricia Clark Kenschaft, Montclair State University	**Brazos, ACC**
3:00 pm - 4:30 pm	**EXHIBIT HALL RECEPTION** Sponsored by Addison-Wesley	**Ballroom A, ACC**
3:00 pm - 4:55 pm	**MAA STUDENT PAPER SESSION #7**	**Taos, ACC**
3:00 pm - 4:55 pm	**MAA STUDENT PAPER SESSION #8**	**Cochiti, ACC**
3:00 pm - 4:55 pm	**PME STUDENT PAPER SESSION #7**	**Picuris, ACC**
3:00 pm - 4:55 pm	**PME STUDENT PAPER SESSION #8**	**Santa Ana, ACC**
3:15 pm – 4:15 pm	**MAA CONTRIBUTED PAPER SESSION** **ALIGNING ASSESSMENT METHODS WITH LEARNING AND TEACHING IN COURSES FOR MAJORS** Donna Beers, Simmons College	**La Cienega, ACC**
3:15 pm	**USING A COURSE-END REPORT FOR ASSESSMENT** Michael Huber, U.S. Military Academy	
3:35 pm	**ASSESSMENT STRATEGIES FOR LINEAR ALGEBRA** Luz M. DeAlba, Drake University	
3:55 pm	**COURSE-EMBEDDED ASSESSMENT IN MATHEMATICS COURSES** Su-Chi Wen, Monmouth University	
3:15 pm - 5:15 pm	**INVITED PAPER SESSION** **INTERESTING TOPICS IN DIFFERENCE EQUATIONS** Sarah Mabrouk, Framingham State College	**Galisteo, ACC**
3:15 pm	**AN INTRODUCTION TO DISCRETE FRACTIONAL CALCULUS AND FRACTIONAL FINITE DIFFERENCE EQUATIONS** Paul W. Eloe, University of Dayton	
4:00 pm	**NONLOCAL BOUNDARY VALUE PROBLEMS FOR SECOND ORDER** Johnny Henderson, Baylor University	
3:15 pm – 5:15 pm	**MINICOURSE #5: PART 1** **GEOMETRY WITH HISTORY FOR TEACHING TEACHERS** David W. Henderson, Cornell University Daina Taimina, Cornell University	**Pecos, ACC**

3:15 pm – 5:15 pm	**MINICOURSE #6: PART 1**	**Ruidoso, ACC**
	CONTEMPORARY COLLEGE ALGEBRA: A REFOCUSED COLLEGE ALGEBRA COURSE	
	Laurette Foster, Prairie View A&M University	
	Dorothy Hunter, Huston-Tillotson College	
	Don Small, U.S. Military Academy	
3:15 pm - 5:30 pm	**GENERAL CONTRIBUTED PAPER SESSION, PART IV**	**Doña Ana, ACC**
	Shawnee McMurran, California State University,	
	San Bernardino; Sarah Mabrouk, Framingham State College	
3:15 pm	**BLAST SOUND PROPAGATION OVER COMPLEX TERRAIN**	
	Gabrielle Miller, New Mexico Institute of Mining and Technology	
3:30 pm	**THE Q-STANDARD POLYNOMIALS**	
	Daniel Birmajer, Nazareth College	
3:45 pm	**AN EXACT SEQUENCE OF WEIGHTED NASH COMPLEXES**	
	Laura Taalman, James Madison University	
4:00 pm	**BEN FRANKLIN'S CODICIL — FINANCIAL MATHEMATICS**	
	Sarah Greenwald, Appalachian State University	
4:15 pm	**NEWTON'S GREATEST "BLUNDER"**	
	Hieu Nguyen, Rowan University	
4:30 pm	**APPLIED PROJECTS IN LINEAR ALGEBRA**	
	Jason Molitierno, Sacred Heart University	
4:45 pm	**ENHANCEMENT OF IMAGES: A PROJECT IN LINEAR ALGEBRA**	
	Mohamed Allali, Chapman University	
5:00 pm	**A FUN APPROACH IN PROVING FIBONACCI IDENTITIES**	
	Danrun Huang, St. Cloud State University	
5:15 pm	**GREAT (BUT LESSER KNOWN) THEOREMS**	
	Fred Worth, Henderson State University	
3:15 pm - 5:45 pm	**INVITED PAPER SESSION**	**San Miguel, ACC**
	GEMS IN APPLIED MATHEMATICS	
	Kay Somers, Moravian College	
3:15 pm	**CHOOSING THE BEST: A DECISION-MAKING PROBLEM**	
	Allan Rossman, Cal Poly-San Luis Obispo	

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Schedule of Events

3:45 pm **PARABOLIC EQUATION METHOD IN UNDERWATER ACOUSTICS**
M. Mayfield, Hood College

4:15 pm **A RECURRING THEME IN DISCRETE MATHEMATICS**
Douglas Ensley, Shippensburg University

4:45 pm **WHAT ARE YOU THINKING? HOW EIGENVECTORS CAN HELP**
Dennis DeTurck, University of Pennsylvania

5:15 pm **WHAT PREPROCESSING CAN DO FOR AN IP PROBLEM**
Kay Somers, Moravian College

3:15 pm – 6:00 pm   **MAA CONTRIBUTED PAPER SESSION**   Aztec, ACC
NIFTY EXAMPLES IN DISCRETE MATHEMATICS
William Marion, Valparaiso University
Brian Hopkins, Saint Peter's College

3:15 pm **TYPOGRAPHY AND SHORTEST PATHS**
Stephen Maurer, Swarthmore College

3:30 pm **MATHEMATICS TO THE RESCUE: CENTRALITY IN GRAPHS**
Benjamin Collins, University of Wisconsin, Platteville

3:45 pm **EXERCISE IN RECONSTRUCTING EVOLUTIONARY TREES**
David Hunter, Westmont College

4:00 pm **THE MULTIPLICITY MATCHING PARAMETER IN SUFFIX TREES**
Mark Ward, University of Pennsylvania

4:15 pm **HARRY POTTER'S POTIONS PUZZLE**
Hugh McGuire, Grand Valley State University

4:30 pm **MATHEMATICAL IDOL 2005**
Colm Mulcahy, Spelman College

4:45 pm **THE COINS GO 'ROUND 'N 'ROUND: BULGARIAN SOLITAIRE**
Suzanne Doree, Augsburg College

5:00 pm **TINY NUMBERS**
Ada Dong, Lawrence Technological University

5:15 pm	**NUMBER REPRESENTATIONS CAN HELP GOLD DIGGERS** Hugh McGuire, Grand Valley State University	
5:30 pm	**A CLASS ACTIVITY FOR TEACHING RECURSION** Raymond Greenwell, Hofstra University	
5:45 pm	**NIFTY EXPLORATIONS IN SEQUENCES AND SUMMATIONS** Diane Spresser, National Science Foundation	
5:00 pm – 6:00 pm	**SIGMAA ON THE HISTORY OF MATHEMATICS COUNT HER IN! (A PLAY ABOUT WOMEN IN MATHEMATICS)** Joanne Peeples, El Paso Community College Hamide Dogan, University of Texas at El Paso	**Brazos, ACC**
5:00 pm – 6:30 pm	**SIGMAA ON TEACHING ADVANCED HIGH SCHOOL MATHEMATICS, BUSINESS MEETING AND RECEPTION** Dan Teague, North Carolina School of Science & Mathematics	**Mesilla, ACC**
5:30 pm – 7:00 pm	**ASSOCIATION OF GAY, LESBIAN, BISEXUAL, AND TRANSGENDERED MATHEMATICIANS' RECEPTION**	**Fiesta 3, Hyatt**
6:00 pm – 7:45 pm	**PME STUDENT BANQUET**	**Grand Pavilion, Hyatt**
8:00 pm – 9:00 pm	**PME/J. SUTHERLAND FRAME LECTURE PROOFS THAT REALLY COUNT: THE ART OF COMBINATORIAL PROOF** Arthur T. Benjamin, Harvey Mudd College	**Grand Pavilion, Hyatt**
9:00 pm – 11:00 pm	**AWM RECEPTION**	**Grand Pavilion, Hyatt**

SATURDAY, AUGUST 6TH

8:00 am – 2:00 pm	**MATHFEST REGISTRATION**	**Ballroom A Foyer, ACC**
8:30 am – 9:20 am	**AWM-MAA LECTURE TECHNIQUES FOR VISUALIZING FREQUENCY PATTERNS IN DNA** Fern Hunt, National Institute of Standards and Technology	**Ballroom C, ACC**
9:00 am – 2:00 pm	**EXHIBITS AND BOOK SALES**	**Ballroom A, ACC**

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Schedule of Events

9:00 am – 2:00 pm	**EMAIL LAB**	**Ballroom A, ACC**
9:00 am – 2:00 pm	**STUDENT HOSPITALITY CENTER**	**Ballroom A, ACC**
9:30 am – 10:20 am	**HEDRICK LECTURE SERIES CRYSTALS, TILINGS, AND PACKINGS**	**Ballroom C, ACC**

LECTURE 3: APOLLONIAN CIRCLE PACKINGS
Jeffrey Lagarias, University of Michigan

10:30 am – 11:20 am	**MAA INVITED ADDRESS**	**Ballroom C, ACC**

CANTOR AND SIERPINSKI, JULIA AND FATOU: CRAZY TOPOLOGY IN COMPLEX DYNAMICS
Robert L. Devaney, Boston University

11:30 am – Noon	**MAA BUSINESS MEETING**	**Ballroom C, ACC**
12:40 pm – 3:15 pm	**MAA CONTRIBUTED PAPER SESSION**	**Aztec, ACC**

SIGMAA ON RUME CONTRIBUTED PAPER SESSION (RESEARCH-TO-PRACTICE)
William Martin, North Dakota State University
Barbara Edwards, Oregon State University

12:40 pm **RESEARCH AND PRACTICE: UNDERGRADUATE MATH PERFORMANCE AND PERSISTENCE OF UNDERREPRESENTED MINORITIES, I**
Eric Hsu, San Francisco State University

1:00 pm **RESEARCH AND PRACTICE: UNDERGRADUATE MATH PERFORMANCE AND PERSISTENCE OF UNDERREPRESENTED MINORITIES, II**
T.J. Murphy, University of Oklahoma

1:20 pm **ASSESSING QUANTITATIVE LITERACY**
Jack Bookman, Duke University

1:40 pm **STUDENTS' ATTITUDES TOWARD STATISTICS**
Lisa Carnell, High Point University

2:00 pm **THE USE OF A LAB SECTION IN TRIGONOMETRY**
Kyle Riley, South Dakota School of Mines & Technology

2:15 pm **USING DEFINITIONS IN TRANSFORMATION GEOMETRY**
John Urenko, Pennsylvania State University

2:40 pm **UNIFIED REPRESENTATION OF FUNCTION**
Aaron Montgomery, Central Washington University

3:00 pm **READING COMPREHENSION AND MATH PERFORMANCE**
Warren Koepp, University of Texas of the Permian Basin

| 1:00 pm – 2:20 pm | **PANELS AND OTHER SESSIONS** | **Mesilla**, ACC |

1:00 pm – 2:20 pm **PANELS AND OTHER SESSIONS** **Mesilla**, ACC
A FRESH START FOR COLLEGIATE MATHEMATICS
Nancy Baxter Hastings, Dickinson College

1:00 pm – 2:20 pm **GRADUATE STUDENT SESSION** **Jemez/Isleta**, ACC
NEGOTIATING WITH THE ADMINISTRATION
Jacqueline Jensen, Sam Houston State University
Kimber Tysdal, Hood College

1:00 pm – 2:20 pm **PANELS AND OTHER SESSIONS** **Galisteo ACC**
USING THE CUPM CURRICULUM GUIDE 2004
Cheryl Olsen, Shippensburg University

1:00 pm – 2:50 pm **MAA STUDENT ACTIVITIES SESSION** **Brazos**, ACC
WALKING ON LONG PATHS
John Harris, Furman University

1:00 pm – 3:00 pm **PANELS AND OTHER SESSIONS** **Taos**, ACC
**AP CALCULUS WORKSHOP: FOCUSING ON THE
FUNDAMENTAL THEOREM**
Daniel Teague, North Carolina School of Science
and Mathematics

1:00 pm – 3:00 pm **INVITED PAPER SESSION** **San Miguel**, ACC
HISTORY AND PHILOSOPHY OF MATHEMATICS
Florence Fasanelli, AAAS
Alejandro Garciadiego, Universidad Nacional
Autónoma de México

1:00 pm **HISTORY AS TRAVEL GUIDE AND COMPANION**
Janet Barnett, Colorado State University-Pueblo

1:30 pm **TEACHING MATHEMATICS:
A MULTIDISCIPLINARY APPROACH**
Alejandro Garciadiego, Universidad Nacional Autonoma de
Mexico

2:00 pm **THE CURRICULUM AND MANAGEMENT OF THE
TEACHING OF MATHEMATICS IN THE U.S.**
Charles Jones, Ball State University

2:30 pm **TBA**
Rodrigo Cambray, Universidad Pedagogica Nacional

1:00 pm – 3:00 pm **GENERAL CONTRIBUTED PAPER
SESSION, PART V** **Doña Ana**, ACC
Shawnee McMurran, California State University
San Bernardino; Sarah Mabrouk, Framingham
State College

1:00 pm **TIC-TAC-TOE ON THE INTEGER LATTICE**
Eric Sundberg, Whittier College

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1:20 pm	**TEACHING INTRODUCTORY MATHEMATICS THROUGH MUSIC** Ilhan Izmirli, American University	
1:40 pm	**TEACHING VIA PROJECTS BASED ON HISTORICAL SOURCES** Joel Luccro-Bryan, New Mexico State University	
2:00 pm	**QUANTITATIVE LITERACY IN A COLLEGE MATH CURRICULUM** Jay Abramson, Arizona State University	
2:15 pm	**CONQUERING CALCULUS CONSTERNATION** Rachel Esselstein, Dartmouth College	
2:30 pm	**WORD PROBLEMS AND QUANTITATIVE LITERACY** Gizem Karaeli, University of California, Santa Barbara	
2:45 pm	**A HIGH SCHOOL COURSE ON POLYHEDRA** Vince Malsko, Quincy University	
1:00 pm – 3:00 pm	**GENERAL CONTRIBUTED PAPER SESSION, PART VI** Shawnee McMurran, California State University, San Bernardino; Sarah Mabrouk, Framingham State College	**Cochiti, ACC**
1:00 pm	**GETTING STUDENTS WARMED UP TO MATHEMATICS** Doreen De Leon, California State University, Fresno	
1:15 pm	**PREDICTING EXAM PERFORMANCE FROM A CONCEPT MAP TERMS** Hamide Dogan-Dunlap, University of Texas at El Paso	
1:30 pm	**GREATEST HITS OF MATHEMATICS** Jeff Johannes, SUNY-Geneseo	
1:45 pm	**NAVIGATING 3D MODELS: MATHEMATICAL AND BIOLOGICAL** Paul McCreary, Xavier University of Louisiana	
2:00 pm	**VISUALIZING THE N-DIMENSIONAL PERMUTATIONS** David Gove, California State University, Bakersfield	
2:15 pm	**THE PENDULUM WEAVES ALL KNOTS AND LINKS** John Starrett, New Mexico Institute of Mining and Technology	
2:30 pm	**MODIFIED DECOMPOSITION METHOD FOR SOLVING DIFFERENTIAL EQUATIONS** Shishon Xie, University of Houston Downtown	

| 2:30 pm | **LUCAS SEQUENCES AND PROBABLE PRIME TESTING** |
| | Richard McIntosh, University of Regina, Canada |

1:00 pm – 3:00 pm	**MINICOURSE #3: PART 2**	Pecos, ACC
	INFUSING CONNECTIONS INTO CORE COURSES	
	FOR FUTURE SECONDARY TEACHERS	
	Steve R. Benson and Al Cucco, Education	
	Development Center	
	Karen J. Graham, University of New Hampshire	
	Neil Portnoy, Stony Brook University	

1:00 pm – 3:00 pm	**MINICOURSE #4: PART 2**	Ruidoso, ACC
	THE MATHEMATICS OF PRESIDENTIAL	
	AND OTHER ELECTIONS	
	Steven J. Brams, New York University	

1:00 pm – 5:00 pm	**MAA CONTRIBUTED PAPER SESSION**	La Cienega, ACC
	ADVANCES IN RECREATIONAL MATHEMATICS	
	Charles Ashbacher, Charles Ashbacher Technologies	

1:00 pm	**SOME NEW RESULTS ON THE GEOMETRY OF**
	TIRE TRACKS
	David Finn, Rose-Hulman Institute of Technology

1:30 pm	**A DISENTANGLEMENT PUZZLE LEADS THROUGH**
	KNOT THEORY
	Matthew Horak, Trinity College

2:00 pm	**ACHIEVEMENT AND AVOIDANCE GAMES ON**
	SEMIGRAPHS
	Brian Borchers, New Mexico Institute of Mining
	and Technology

| 2:30 pm | **NEW RESULTS IN PEG SOLITAIRE** |
| | George Bell, Boulder, Colorado |

| 3:00 pm | **NIM FOR THREE OR MORE PLAYERS** |
| | Annela Kelly, University of Louisiana at Monroe |

| 3:30 pm | **OPTIMAL STRATEGY FOR "TRICK YOUR NEIGHBOR"** |
| | Paul Coe, Dominican University |

4:00 pm	**SIMULATING ALCOHOL USE AMONG**
	COLLEGE STUDENTS
	Laura Garrison, York College of Pennsylvania

| 4:30 pm | **THE HOUSE OF MANY GABLES** |
| | Michael Engquist, St. Edward's University |

Schedule of Events

2:30 pm - 3:50 pm		**GRADUATE STUDENT PROGRAM** **THE FIRST YEAR EXPERIENCE AS A FACULTY MEMBER** Julie Jones, Sam Houston State University	**Jemez/Isleta, ACC**
2:30 pm - 4:30 pm		**INVITED PAPER SESSION** **COOL APPLICATIONS OF COMPLEX** **ANALYSIS AT THE UNDERGRADUATE LEVEL** Michael A. Brilleslyper and Beth Schaubroeck, U.S. Air Force Academy	**Mesilla, ACC**
	2:30 pm	**REAL CHAOS-COOL COMPLEX FUNCTION** **SOLUTIONS** Rich Stankewitz, Ball State University	
	3:00 pm	**MINIMAL SURFACES BY WAY OF COMPLEX ANALYSIS** Michael Dorff, Brigham Young University	
	3:30 pm	**PUSHING ANALYTIC FUNCTIONS AROUND** **CIRCLE BY CIRCLE** Ken Stephenson, University of Tennessee	
	4:00 pm	**ALL KINDS OF SOURCES AND SINKS** Michael Brilleslyper, U.S. Air Force Academy	
3:00 pm - 3:50 pm		**MAA STUDENT LECTURE** **LIGHTS, CAMERA, FREEZE!** Annalisa Crannell, Franklin and Marshall College	**Brazos, ACC**
3:00 pm - 4:30 pm		**MAA ALDER AWARDS SESSION** Carl Cowen, MAA President	**Galisteo, ACC**
	3:00 pm	**MAKING BEAUTIFUL MUSIC IN THE MATHEMATICS** **CLASSROOM** Matt DeLong, Taylor University	
	3:30 pm	**CONNECTING STUDENTS TO MATHEMATICS** **USING HISTORY, VISUALIZATION, AND POP CULTURE** Sarah J. Greenwald, Appalachian State University	
	4:00 pm	**BRAINWASHING AND GREAT EXPECTATIONS** Laura Taalman, James Madison University	
3:15 pm – 5:00 pm		**GENERAL CONTRIBUTED PAPER** **SESSION, PART VII** Shawnee McMurran, California State University, San Bernardino; Sarah Mabrouk, Framingham State College	**Doña Ana, ACC**
	3:15 pm	**QUESTIONABLE MATHEMATICS WITH A SHUFFLED DECK** Colm Mulcahy, Spelman College	

	3:30 pm	**WOMEN IN MATHEMATICS: A NEW COURSE** Lyn Phy, Kutztown University	
	3:45 pm	**THE TABLET PC IN THE MATHEMATICS CLASSROOM** James Rolf, U.S. Military Academy	
	4:00 pm	**COMPUTER SIMULATIONS FOR TEACHING STATISTICS** Fabio Santos, Raymond Walters College, University of Cincinnati	
	4:15 pm	**PATTERN BREAKERS IN ELEMENTARY NUMBER THEORY** Jay Schiffman, Rowan University	
	4:30 pm	**MOM! THERE'S A HYPOCYCLOID IN MY CLOSET!** Derek Seiple, Penn State University	
	4:45 pm	**SEVERAL PROBLEMS IN LINEAR ALGEBRA** Robert Fontenot, Whitman College	
3:15 pm – 5:15 pm		**GENERAL CONTRIBUTED PAPER SESSION, PART VIII** Shawnee McMurran, California State University, San Bernardino; Sarah Mabrouk, Framingham State College	**Cochiti, ACC**
	3:15 pm	**GROUP ACTION DECOMPOSITIONS FOR SYMMETRIC TENSORS** Scott Greenleaf, University of New England	
	3:30 pm	**PROVING MINKOWSKI'S INEQUALITY AS A TOOL FOR STUDENT RESEARCH** Xiao-Xiong Gan, Morgan State University	
	3:45 pm	**DISCOVERING BINOMIAL IDENTITIES WITH PASCAL GT** Tyler Evans, Humboldt State University	
	4:00 pm	**PRIME NUMBER THEOREM WITH LITTLEWOOD OSCILLATIONS** Genghmun Eng, The Aerospace Corporation	
	4:15 pm	**THE EIGENVALUE IMPLICATION PROBLEM** Ralph DeMarr, American Mathematical Society	
	4:30 pm	**THE T-PEBBLING NUMBER FOR CYCLES** Ji Young Choi, Shippensburg University	
	4:45 pm	**ELECTION 2004 AND ALTERNATIVE VOTING METHODS IN NY** Joseph Kolacinski, Elmira College	

Schedule of Events

3:15 pm - 5:15 pm		**PANELS AND OTHER SESSIONS** **PREPARING SUCCESSFUL TEAMS FOR MATHEMATICS COMPETITIONS** Steven R. Dunbar, University of Nebraska	Taos, ACC
3:15 pm – 5:15 pm		**MINICOURSE #5: PART 2** **GEOMETRY WITH HISTORY FOR TEACHING TEACHERS** David W. Henderson, Cornell University Daina Taimina, Cornell University	Pecos, ACC
3:15 pm – 5:15 pm		**MINICOURSE #6: PART 2** **CONTEMPORARY COLLEGE ALGEBRA: A REFOCUSED COLLEGE ALGEBRA COURSE** Laurette Foster, Prairie View A&M University Dorothy Hunter, Huston-Tillotson College Don Small, U.S. Military Academy	Ruidoso, ACC
3:15 pm – 5:15 pm		**INVITED PAPER SESSION** **GRAPH THEORY IDEAS FOR UNDERGRADUATE RESEARCH** Aparna Higgins, University of Dayton	San Miguel, ACC
	3:15 pm	**LINE GRAPHS AND PEBBLING** Aparna Higgins, University of Dayton	
	4:00 pm	**HAMILTONIAN CIRCUITS IN CAYLEY DIGRAPHS** Daniel Isaksen, Wayne State University	
	4:30 pm	**SOME ATTRACTIVE ANIMALS OF THE GRAPH LABELING ZOO** Zsuzsanna Szaniszlo, Valparaiso University	
	5:00 pm	**WHAT MAKES A GOOD UNDERGRAD GRAPH THEORY PROBLEM?** Joe Gallian, University of Minnesota, Duluth	
3:30 pm – 5:30 pm		**MAA CONTRIBUTED PAPER SESSION** **INNOVATIONS IN TEACHING DISCRETE MATHEMATICS** William E. Fenton, Bellarmine University Nancy Hagelgans, Ursinus College	Aztec, ACC
	3:30 pm	**AN EXERCISE SET FOR INITIATING A COURSE** Mike Pinter, Belmont University	
	3:45 pm	**PRIMARY HISTORICAL SOURCES IN DISCRETE MATHEMATICS** Jerry Lodder, New Mexico State University	
	4:00 pm	**LAMÉ PROJECT FOR COMPUTER SCIENCE STUDENTS** Inna Pivkina, New Mexico State University	

4:15 pm	**EARLY WRITINGS ON GRAPH THEORY:** **THREE PROJECTS** Janet Barnett, Colorado State University-Pueblo	
4:30 pm	**DNA ALIGNMENT AS A CAPSTONE:** **DISCRETE MATH TOPIC** Stephen Maurer, Swarthmore College	
4:45 pm	**GRAPH DATABASE** Jason Grout, Brigham Young University	
5:00 pm	**TECHNOLOGY EXPLORATIONS IN** **DIFFERENCE EQUATIONS** Mazen Shahin, Delaware State University	
5:15 pm	**INTERACTIVE ONLINE MATERIAL FOR DISCRETE MATH** Winston Crawley, Shippensburg University	
4:00 pm – 4:50 pm	**STUDENT PROBLEM** **SOLVING COMPETITION** Richard Neal, American Society for Communication of Mathematics	**Brazos, ACC**
5:00 pm – 6:15 pm	**MAA MATHEMATICAL CONTEST IN** **MODELING (MCM)** **WINNERS** Ben Fusaro, Florida State University	**Brazos, ACC**
6:00 pm – 9:00 pm	**MAA SILVER AND GOLD RECEPTION** **AND BANQUET** Speaker: Alan Tucker, SUNY at Stony Brook Emcee: Tina Straley, MAA Executive Director	**Enchantment Ballroom,** **Hyatt**

Invited Addresses

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

MAA INVITED ADDRESS
CALCULUS TEXTS
Underwood Dudley, Florida State University
Thursday, August 4, 8:30 am - 9:20 am
Ballroom C, Albuquerque Convention Center
Calculus texts are important, and heavy. This talk will survey what has been in them since the first, L'Hospital's in 1696, what should be in them, and what should not be in them. It ends with a moral conclusion.

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

LECTURE 1: MATHEMATICAL CRYSTALS AND QUASICRYSTALS
Thursday, August 4, 9:30 am - 10:20 am
Ballroom C, Albuquerque Convention Center
Quasicrystals, discovered in 1982, are materials having long range order evidenced by their X-ray diffraction patterns, but exhibit symmetries impossible for any crystalline structure. Understanding the structure of such materials leads to many interesting mathematical questions, not all answered. Recent developments shed new light on the boundary between crystallinity and a periodic order.

LECTURE 2: TILINGS WITH ONE TILE
Friday, August 5, 9:30 am - 10:20 am
Ballroom C, Albuquerque Convention Center
The first part of Hilbert's 18th problem asked about tilings of space by congruent copies of a single tile (an "Einstein"). Many questions about such tiles and the structure of their allowed tilings remain unsolved, even in one dimension.

LECTURE 3: APOLLONIAN CIRCLE PACKINGS
Saturday, August 6, 9:30 am - 10:20 am
Ballroom C, Albuquerque Convention Center
Arrangements of circles have been studied since antiquity. Apollonian circle packings are infinite arrangements of touching circles generated from an initial configuration of four mutually touching circles. The limit set of a packing (closure of tangency points) is one of the first studied fractals. Some Apollonian circle packings have an integral structure, involving both the radii and the centers of the circles. In this talk we discuss the structure of these packings and the source of these integrality properties.

MAA INVITED ADDRESS
GRAPHS, TREES, PEBBLES, AND ROBOTS
Ruth Haas, Smith College
Thursday, August 4, 10:30 am - 11:20 am
Ballroom C, Albuquerque Convention Center
The arboricity of a graph is the minimum number of spanning forests into which its edges can be partitioned. We discuss several old and new characterizations of this number and its variants, including a new method for finding this number through "pebbling" the graph. This work has application to determining if a graph is rigid and if not, what motions it allows. This in turn can be used to understand the motions of robots.

MAA-NAM DAVID BLACKWELL LECTURE
MODELING THE PHARMACOKINETICS OF A CHEMICAL USED IN HOUSEHOLD CONSUMER PRODUCTS
Leona H. Clark, Bennett College for Women
Friday, August 5, 8:30 am - 9:20 am
Ballroom C, Albuquerque Convention Center
Perfluorooctane sulfonate (PFOS), a member of a class of perfluorinated chemicals used in a variety of consumer products as oil, water, and grease repellants, has been shown to be toxic in laboratory animals. Because PFOS has been shown to be persistent and widely distributed in the environment and has been detected in the blood of fluorochemical workers and non-occupationally exposed humans, there have been growing concerns about its potential health risk to humans. The mathematical model to be presented describes the pharmacokinetics (absorption, distribution, metabolism, and elimination) of PFOS following oral exposure and provides a framework for dose-response analyses needed to help assess the risk that exposure to PFOS might have on human health and the environment.

JAMES R.C. LEITZEL LECTURE
INCREASING THE NUMBER OF MATHEMATICS MAJORS: LESSONS LEARNED FROM WORKING WITH THE MINORITY COMMUNITY
William Yslas Vélez, University of Arizona
Friday, August 5, 10:30 am - 11:20 am
Ballroom C, Albuquerque Convention Center
In the late 1980s I began to increase the number of minorities surviving our first semester calculus course. My goal was very modest — help them pass this course. As I worked with these students my own ideas about the importance of calculus began to change. We all know that this course is the gateway to all scientific disciplines, but it is much more than this. It gives mathematicians the opportunity to entice students into the study of mathematics. Calculus should not be thought of as a service course for the university, it should be viewed as serving the intellectual needs of the student. My efforts to increase minority participation now focus on helping students understand the importance of including more mathematics in their undergraduate curriculum. When I talk to students in calculus, I try to convince them to take more mathematics, and to become mathematics majors. This has resulted in a substantial increase in the number of minority mathematics majors in the department.

PME/J. SUTHERLAND FRAME LECTURE
PROOFS THAT REALLY COUNT: THE ART OF COMBINATORIAL PROOF
Arthur T. Benjamin, Harvey Mudd College
Friday, August 5, 8:00 pm - 9:00 pm
Grand Pavilion, Hyatt

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

AWM-MAA LECTURE
TECHNIQUES FOR VISUALIZING FREQUENCY PATTERNS IN DNA
Fern Hunt, National Institute of Standards and Technology
Saturday, August 6, 8:30 am - 9:20 am
Ballroom C, Albuquerque Convention Center

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

MAA INVITED ADDRESS
CANTOR AND SIERPINSKI, JULIA AND FATOU: CRAZY TOPOLOGY IN COMPLEX DYNAMICS
Robert L. Devaney, Boston University
Saturday, August 6, 10:30 am - 11:20 am
Ballroom C, Albuquerque Convention Center

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

MAA STUDENT LECTURE
LIGHTS, CAMERA, FREEZE!
Annalisa Crannell, Franklin & Marshall College
Saturday, August 6, 3:00 pm - 3:50 pm
Brazos, Albuquerque Convention Center

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

Invited Paper Sessions

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

DOUBLE BUBBLES IN S^n AND GAUSS SPACE

Frank Morgan, Williams College
Thursday, August 4, 1:00 pm - 4:00 pm
Jemez/Isleta, Albuquerque Convention Center
Members and alums of the Williams College NSF SMALL Undergraduate Research Geometry Group will report on the double bubble problem in the n-dimensional sphere S^n and Gauss space G^n. The double bubble problem asks for the least-area way to enclose and separate two given volumes. The general problem remains open in R^5, S^3, and G^2, although there are interesting partial results.

THE MANY BRANCHES OF DYNAMICAL SYSTEMS

Mario Martelli, Claremont-McKenna College
Thursday, August 4, 1:00 pm - 6:30 pm
Galisteo, Albuquerque Convention Center
Speakers include: John Milton, MD, Claremont McKenna College, "Delayed feedback at stability's edge"; Michael A. Jones and Diana Thomas, Montclair State University, "Nim: a finite shift register sequence"; Jim Cushing, University of Arizona, Tucson, "Chaos theory and experiments in population dynamics"; Annalisa Crannell, Franklin & Marshall College, "Quasi-continuous dynamical systems"; Hal Smith, Arizona State University, Tempe, "High dimensional dynamics of continuous and discrete systems reduced to low dimensional dynamics of mappings"; Bob Devaney, Boston University, "Rings and satellites around the McMullen domain"; Marc Chamberland, Grinnell College, "Dynamics of the degree six Landen transformation"; and Ami Radunskaya, Pomona College, "Stochastically self-limiting growth."

GEMS OF NUMBER THEORY

Arthur T. Benjamin, Harvey Mudd College
Ezra A. Brown, Virginia Polytechnic Institute
Friday, August 5, 1:00 pm - 3:00 pm
San Miguel, Albuquerque Convention Center
Come listen to four exciting talks on a wide range of number theoretic topics. The session features talks by Jennifer Beineke, Western New England College, on "Great moments of the Riemann zeta function"; Edward Burger, Williams College, on "A rational approach to irrationality" (or "Diophantine approximation for the impatient";) Marc Chamberland, Grinnell College, on "The Collatz chameleon"; and Roger Nelsen, Lewis and Clark College, on "Some visual gems from elementary number theory."

GEMS IN APPLIED MATHEMATICS

Kay Somers, Moravian College
Friday, August 5, 3:15 pm – 5:45 pm
San Miguel, Albuquerque Convention Center
Talks in this session will address themes and threads in various areas of applied mathematics. Each speaker will present a favorite "gem" to help illustrate some of the breadth and scope of applications of mathematics. Speakers and the titles of their talks are: Dennis DeTurck, University of Pennsylvania, "What are you thinking? How eigenvalues can help"; Doug Ensley, Shippensburg University, "A recurring theme in discrete mathematics"; Betty Mayfield, Hood College, "The parabolic equation method in underwater acoustics"; Allan Rossman, California Polytechnic State University, "Choosing the best: decision-making under uncertainty"; and Kay Somers, Moravian College, "An integer programming problem: What pre-processing can do."

TEACHING COMBINATORIAL MATHEMATICS

Alan Tucker, SUNY at Stony Brook
Friday, August 5, 1:00 pm – 3:00 pm
Galisteo, Albuquerque Convention Center
The speakers will be David Bressoud, Macalester College, "Teaching combinatorics in a discrete math course," Richard Grassl, University of Northern Colorado, "Teaching combinatorics to math teachers"; Jack Graver, Syracuse University, "Thoughts on teaching combinatorics," and Alan Tucker, "How George Pólya taught me how to teach combinatorics."

INTERESTING TOPICS IN DIFFERENCE EQUATIONS

Sarah Mabrouk, Framingham State College
Friday, August 5, 3:15 pm – 5:15 pm
Galisteo, Albuquerque Convention Center
Speakers include Johnny Henderson, Baylor University and Paul W. Eloe, University of Dayton.

HISTORY AND PHILOSOPHY OF MATHEMATICS

Florence Fasanelli, AAAS
Alejandro Garciadiego, Universidad Nacional
Autónoma de México
Saturday, August 6, 1:00 pm – 3:00 pm
San Miguel, Albuquerque Convention Center
Speakers will reflect on the philosophy behind their individual courses in mathematics, mathematics education and the history of mathematics and how the history of mathematics informs their teaching in a political world. Speakers include Janet Barnett, Colorado State University-Pueblo, and Charles Jones, Ball State University.

COOL APPLICATIONS OF COMPLEX ANALYSIS AT THE UNDERGRADUATE LEVEL

Michael A. Brilleslyper and Beth Schaubroeck,
U. S. Air Force Academy
Saturday, August 6, 2:30 pm – 4:30 pm
Mesilla, Albuquerque Convention Center
Complex Analysis holds a central place in the undergraduate mathematics curriculum. It brings together and unifies diverse ideas from vector calculus, geometry, topology, and analysis. It has far-reaching applications to fields such as fluid dynamics and electrical engineering, as well as mathematical areas such as number theory. Advances in technology have allowed many difficult ideas in the field to be visualized and have allowed extremely involved calculations to be done with ease. This session explores four areas where the power of complex variables plays a central role in the

key problems and their solutions. Speakers include Rich Stankewitz, Ball State University, "Chaos and real dynamics understood through complex function theory"; Michael Dorff, Brigham Young University, "Some results about minimal surfaces by way of planar harmonic mappings and complex analysis", Ken Stephenson, University of Tennessee, "Pushing around analytic functions, circle by circle"; and Michael A. Brilleslyper, "Fluid flow and electric fields with all kinds of sources and sinks".

GRAPH THEORY IDEAS FOR UNDERGRADUATE RESEARCH

Aparna Higgins, University of Dayton
Saturday, August 6, 3:30 pm – 5:30 pm
San Miguel, Albuquerque Convention Center
This session will highlight some topics in graph theory that are intriguing to undergraduate researchers. The speakers, all of whom have successfully guided undergraduate students in research, will present the areas of graph labeling, Hamiltonian circuits in Cayley digraphs, pebbling, and line graphs. The speakers have directed undergraduate research in intensive summer experiences and in year-long undergraduate thesis activities. The session will provide insight into what makes a topic in graph theory suitable for investigations by undergraduates, and will provide additional avenues of research. Speakers include Daniel Isaksen, Wayne State University, "Hamiltonian circuits in Cayley digraphs"; Zsuzsanna Szaniszlo, Valparaiso University, "Graceful, equitable, magic, and other attractive animals of the graph labeling zoo"; Aparna Higgins, University of Dayton, "Line graphs and pebbling"; Joseph A. Gallian, University of Minnesota at Duluth, "What makes a good graph theory problem for undergraduates?"

Contributed Paper Sessions

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

GENERAL CONTRIBUTED PAPER SESSION

Shawnee L. McMurran, California State University San Bernardino
Sarah L. Mabrouk, Framingham State College
Thursday, August 4, 1:00 pm – 5:00 pm
Friday, August 5, 1:00 pm – 5:30 pm
Saturday, August 6, 1:00 pm – 5:00 pm
Doña Ana, Albuquerque Convention Center

Saturday, August 6, 1:00 pm – 5:15 pm
Cochiti, Albuquerque Convention Center

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

Kirby A. Baker, UCLA
Roger Nelson, Ball State University
Part 1: Thursday, August 4, 1:00 pm – 3:00 pm
Part 2: Friday, August 5, 1:00 pm – 3:00 pm
Aztec, Albuquerque Convention Center

CURRENT ISSUES IN MATHEMATICS EDUCATION COURSES

Carol Vobach, University of Houston-Downtown
Thursday, August 4, 1:00 pm – 5:00 pm
La Cienega, Albuquerque Convention Center

INNOVATIVE MATHEMATICS MAJORS IN SMALL/MEDIUM DEPARTMENTS

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

ENVIRONMENTAL MATHEMATICS

Ben Fusaro, Florida State University
Bill Stone, New Mexico Institute of Mining & Technology
Thursday, August 4, 1;00 pm – 3:20 pm
Brazos, Albuquerque Convention Center

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

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

ALIGNING ASSESSMENT METHODS WITH LEARNING AND TEACHING IN COURSES FOR MAJORS

Donna Beers, Simmons College
Friday, August 5, 3:15 pm – 4:15 pm
La Cienega, Albuquerque Convention Center

NIFTY EXAMPLES IN DISCRETE MATHEMATICS

William Marion, Valparaiso University
Brian Hopkins, Saint Peter's College
Friday, August 5, 3:15 pm – 6:00 pm
Aztec, Albuquerque Convention Center

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

William Martin, North Dakota State University
Barbara Edwards, Oregon State University
Saturday, August 6, 12:40 pm – 3:15 pm
Aztec, Albuquerque Convention Center

ADVANCES IN RECREATIONAL MATHEMATICS

Charles Ashbacher, Charles Ashbacher Technologies
Saturday, August 6, 1:00 pm – 5:00 pm
La Cienega, Albuquerque Convention Center

INNOVATIONS IN TEACHING DISCRETE MATHEMATICS

William E. Fenton, Bellarmine University
Nancy Hagelgans, Ursinus College
Saturday, August 6, 3:30 pm – 5:30 pm
Aztec, Albuquerque Convention Center

NEED A LUNCH BREAK?

Visit the Exhibit Hall in Ballroom A, ACC for a Hot Food and Salad Buffet Bar.

Hours

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

A lounge area is available for your extended breaks.

Panels and Other Sessions

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

WORKSHOP ON TRAINING T.A.s

David Manderscheid, University of Iowa
Maria Terrell, Cornell University
Sol Friedberg, Boston College
Thursday, August 4, Noon to 2:20 pm
Acoma, Albuquerque Convention Center
How are T.A. training sessions set up? What are the similarities and differences between such sessions? How can case studies be used to support T.A. training? How might T.A. training compare with preparing your faculty? These issues and others will be discussed. Participants should bring T.A. training materials they might have to this interactive workshop.

TOWN MEETING ON COLLEGE CALCULUS: RESPONDING TO CHANGING DEMOGRAPHICS

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

SUMMA SPECIAL SESSION ON MAA STUDENT RESEARCH PROGRAMS

William Hawkins, Jr., MAA and University of the District of Columbia and Robert E. Megginson, University of Michigan
Thursday, August 4, 1:00 pm – 2:20 pm
San Miguel, Albuquerque Convention Center
The MAA supported small research teams of a faculty member and four minority undergraduates at 12 sites in the Summer of 2005 with funds from NSA, NSF, and the Moody's Foundation. Jack Morrell of Atlanta Metropolitan College and Cynthia Wyels of California Lutheran University will give presentations about their projects and their students' work. There will be ample time for discussion and questions. More information about the MAA National Research Experiences for Undergraduates Program (NREUP) can be found at http://www.maa.org/nreup.

MAA SECTION OFFICERS MEETING

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

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

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

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

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

MAA PRIZE SESSION

Friday, August 5, 11:30 am – Noon
Ballroom C, Albuquerque Convention Center
Winners of the MAA awards for expository writing will be announced. Come to honor the authors of the best articles published in MAA journals. This session will be moderated by Martha J. Siegel, Towson University, MAA Secretary.

HOW TO APPLY FOR JOBS

David Manderscheid, University of Iowa
Friday, August 5, 1:00 pm – 2:20 pm
Jemez/Isleta, Albuquerque Convention Center

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

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

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

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

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

NATIONAL MATH VIEW: A LOOK AT STATE MATHEMATICAL STANDARDS

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

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

CONVERSATIONS ABOUT MATHEMATICS AND THE ENVIRONMENT

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

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

MAA BUSINESS MEETING

Saturday, August 6, 11:30 am – Noon
Ballroom C, Albuquerque Convention Center

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

A FRESH START FOR COLLEGIATE MATHEMATICS

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

The CUPM Curriculum Guide 2004 called for improving the mathematical experience for all students. The MAA has subsequently launched a new initiative to consider the effect of refocusing the traditional college algebra course in order to place more emphasis on conceptual understanding and realistic applications via mathematical modeling. The goal is to identify practices that can improve all courses at the precalculus level.

As part of this movement, the MAA is publishing a collection of over 50 articles on different aspects of the issues. Some of the major themes include reforming college algebra, precalculus and related courses, research on student learning, the transition from high school to college, the needs of other disciplines, implications of technology, implementation issues, and projects that work. In this presentation, editors of the volume will present overviews of the issues and the major points made by the authors. Panelists include Sheldon P. Gordon, Farmingdale State University of New York; Florence S. Gordon, New York Institute of Technology; and Nancy Baxter Hastings.

Panels and Other Sessions

USING THE CUPM CURRICULUM GUIDE 2004

Cheryl Olsen, Shippensburg University
Saturday, August 6, 1:00 pm – 2:20 pm
Galisteo, Albuquerque Convention Center
Speakers will present their experiences using the 2004 CUPM Curriculum Guide to direct their department program review and to make alterations in their program. Speakers will address issues related to administrators' interaction and issues, including practicality of developing a capstone course. Speakers will be in various stages of the implementation process. The session is sponsored by the Committee on the Teaching of Undergraduate Mathematics (CTUM) and the Committee on the Undergraduate Program in Mathematics (CUPM).

AP CALCULUS WORKSHOP: FOCUSING ON THE FUNDAMENTAL THEOREM

**Daniel Teague, North Carolina School of Science
and Mathematics**
Saturday, August 6, 1:00 pm – 3:00 pm
Taos, Albuquerque Convention Center
This session is designed specifically for teachers of AP Calculus (both AB and BC) but will be of interest to all faculty teaching introductory calculus. The session will present several approaches to teaching the fundamental theorem with a special focus on the role of theory in an introductory class. Applications of the fundamental   theorem will also be considered. David Bressoud of Macalester College and Lisa Townsley of Benedictine University are the panelists for this discussion.

MAA ALDER AWARDS SESSION

Carl Cowen, MAA President
Saturday, August 6, 3:00 pm - 4:30 pm
Galisteo, Albuquerque Convention Center
Presentations will be given by the 2005 Alder Award recipients: Matt DeLong, Taylor University; Sarah Greenwald, Appalachian State University; and Laura Taalman, James Madison University.

PREPARING SUCCESSFUL TEAMS FOR MATHEMATICS COMPETITIONS

Steven R. Dunbar, University of Nebraska
Saturday, August 6, 3:15 pm – 5:15 pm
Taos, Albuquerque Convention Center
The Chairs of the American Mathematics Competitions contest writing committees will lead a workshop for teachers and mentors of math clubs and mathematics competition teams, sharing tips for preparing students for middle school and high school mathematics competitions. Award-winning teachers with high-scoring teams will also share their tips. Teachers will learn about topics that are important for contests that are not normally covered in the classroom. The goal of the workshop is to show middle-school and high-school teachers and math club and math circle leaders how to prepare students for mathematics competitions. The session will be moderated by Steven R. Dunbar. Panelists include: Elgin Johnston, Iowa State University; Bonnie Leitch, Alamo Heights School District, New Braunfels TX; Doug Faires, Youngstown State University; David Wells, Penn State University at New Kensington; and Steven Blasberg, West Valley Community College.

**Join Us for an
Exhibit Hall
Reception**

**Sponsored by Addison-Wesley
Friday August 5th
3:00 pm – 4:30 pm**

**Ballroom A
Albuquerque Convention Center**

Graduate Student Program

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

GRADUATE STUDENT POSTER SESSION

John Vano, University of Wisconsin
Thursday, August 4, 3:00 pm – 5:00 pm
Nambé/Navajo, Albuquerque Convention Center
This session is organized by the MAA Committee on Graduate Students and the Young Mathematician's Network.

GRADUATE STUDENT RECEPTION

Thursday, August 4, 5:00 pm – 6:00 pm
Enchantment Ballroom E/F, Hyatt

HOW TO APPLY FOR JOBS

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

NEGOTIATING WITH THE ADMINISTRATION

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

THE FIRST YEAR EXPERIENCE AS A FACULTY MEMBER

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

Student Activities

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

MAA/PME RECEPTION
Wednesday, August 3, 5:30 pm – 6:30 pm
Fiesta 1, Hyatt
Undergraduate student reception sponsored by the MAA and PME.

STUDENT HOSPITALITY CENTER
Richard and Araceli Neal, American Society for the Communication of Mathematics
Thursday, August 4, 9:00 am – 5:00 pm
Friday, August 5, 9:00 am – 5:00 pm
Saturday, August 6, 9:00 am – 2:00 pm
Ballroom A, Albuquerque Convention Center
The Student Hospitality Center (SHC) provides a place for students and other MathFest attendees to meet for informal conversation, refreshments, and mathematical diversions. The SHC provides programs for both MAA and PME student paper sessions and information on MathFest activities of interest to students.

MAA STUDENT PAPER SESSIONS
Edward C. Keppelmann, University of Nevada
Mary S. Hawkins, Prairie View A&M University
Thursday, August 4, 1:00 pm – 5:00 pm
Friday, August 5, 1:00 pm – 5:00 pm
Taos/Cochiti, Albuquerque Convention Center
The MAA Committee on Undergraduate Student Activities and Chapters organizes these sessions. A schedule of talks will be available on-site.

PME PAPER SESSIONS
J. Douglas Faires, Youngstown State University
Thursday, August 4, 1:00 pm – 5:00 pm
Friday, August 5, 1:00 pm – 5:00 pm
Picuris/Santa Ana, Albuquerque Convention Center
Pi Mu Epsilon hosts these sessions as part of their annual meeting, held in conjunction with MathFest. A schedule of talks will be available on-site.

MATH HORIZONS SPECIAL SESSION
Arthur T. Benjamin, Harvey Mudd College
Jennifer J. Quinn, Occidental College
Thursday, August 4, 5:00 pm – 5:45 pm
Taos, Albuquerque Convention Center
Meet the editors of *Math Horizons*. It is the MAA's magazine for students, filled with intriguing articles, profiles, problems, humor, and contests. We are interested in your suggestions and we will be looking for students to join our Student Advisory Group.

PME BANQUET
Sponsored by PME and the MAA
Friday, August 5, 6:00 pm – 7:45 pm
Grand Pavilion, Hyatt

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

PME/J. SUTHERLAND FRAME LECTURE
PROOFS THAT REALLY COUNT: THE ART OF COMBINATORIAL PROOF
Arthur T. Benjamin, Harvey Mudd College
Friday, August 5, 8:00 pm – 9:00 pm
Grand Pavilion, Hyatt
Mathematics is the science of patterns, and mathematicians attempt to understand these patterns and discover new ones using various tools. In this talk, we demonstrate that many number patterns, even very complex ones, can be understood by simple counting arguments. You will enjoy the magic of Fibonacci numbers, Lucas numbers, continued fractions, and more. You can count on it! This talk is based on research with Professor Jennifer Quinn and many, many undergraduates.

UNDERGRADUATE STUDENT ACTIVITIES SESSION
WALKING ON LONG PATHS
John Harris, Furman University
Saturday, August 6, 1:00 pm – 2:50 pm
Brazos, Albuquerque Convention Center
In this workshop several basic graph theory concepts will be presented, a few facts about paths will be described, and a few open problems will be shared. Student participants will work together to find examples that relate to the topics being discussed.

MAA STUDENT LECTURE
LIGHTS, CAMERA, FREEZE!
Annalisa Crannell, Franklin & Marshall College
Marc Frantz, Indiana University
Saturday, August 6, 3:00 pm – 3:50 pm
Brazos, Albuquerque Convention Center
See the Invited Address section for details.

STUDENT PROBLEM SOLVING COMPETITION
Richard Neal, American Society for the Communication of Mathematics
Saturday, August 6, 4:00 pm – 4:50 pm
Brazos, Albuquerque Convention Center
This is the finals of the Problem Solving Competition. Universities and colleges that participate monthly on their own campuses by holding problem solving contests were invited to send two contestants.

MAA MATHEMATICAL CONTEST IN
MODELING (MCM) WINNERS
Ben Fusaro, Florida State University
Saturday, August 6, 5:00 pm – 6:15 pm
Brazos, Albuquerque Convention Center
The MAA chose two of the Mathematical Contest in Modeling Outstanding teams as MAA "Winners," and both will make presentations. The teams are from the University of Saskatchewan and Duke University. The Saskatchewan team was recognized for its modeling of a dam failure. The Duke team was recognized for its design of a toll booth plaza that optimizes traffic flow.

Minicourses

MINICOURSE #1
TEACHING A COURSE IN THE HISTORY OF MATHEMATICS
V. Frederick Rickey, U.S. Military Academy
Victor J. Katz, University of the District of Columbia
Part 1: Thursday, August 4, 1:00 pm – 3:00 pm
Part 2: Friday, August 5, 1:00 pm – 3:00 pm
Pecos, Albuquerque Convention Center
Many schools are introducing courses in the history of mathematics and asking faculty who may never have taken such a course to teach them. This minicourse will assist those teaching history by introducing participants to numerous resources, discussing differing approaches and sample syllabi, providing suggestions for student projects and assessments, and giving those teaching such courses for the first time the confidence to master the subject themselves and to present the material to their students.

MINICOURSE #2
MATHEMATICAL FINANCE
Walter R. Stromquist, Bryn Mawr College
Part 1: Thursday, August 4, 1:00 pm – 3:00 pm
Part 2: Friday, August 5, 1:00 pm – 3:00 pm
Ruidoso, Albuquerque Convention Center
We will begin by introducing the standard model for stock prices, Geometric Brownian Motion, and we will examine market price statistics to test the validity of this model. We will then cover two main ideas of modern finance: portfolio optimization and option valuation. Portfolio optimization means allocating a fixed investment fund among various risky assets; we will see how this is turned into a quadratic programming problem, and how it leads to the Capital Asset Pricing Model. Option valuation includes the well-known Black-Scholes formula, which we will cover thoroughly. The presenter will draw on practical examples from his consulting work and from his financial mathematics class at Bryn Mawr College.

MINICOURSE #3
INFUSING CONNECTIONS INTO CORE COURSES FOR FUTURE SECONDARY TEACHERS
Steve R. Benson and Al Cuoco, Education Development Center; Karen J. Graham, University of New Hampshire
Neil Portnoy, Stony Brook University
Part 1: Thursday, August 4, 3:15 pm – 5:15 pm
Part 2: Saturday, August 6, 1:00 pm – 3:00 pm
Pecos, Albuquerque Convention Center
National recommendations call for content courses for prospective teachers that make explicit connections between the mathematics that teachers learn and the mathematics they will use as teachers. Most content courses for preservice secondary teachers are core courses for the mathematics major and texts for these courses do not typically address these connections. Minicourse participants will work with materials that contain the mathematical rigor of an upper division course and help prospective teachers build connections to secondary mathematics, discuss implementation issues with colleagues who have used such materials, and begin to adapt these materials for the courses they teach.

MINICOURSE #4
THE MATHEMATICS OF PRESIDENTIAL AND OTHER ELECTIONS
Steven J. Brams, New York University
Part 1: Thursday, August 4, 3:15 pm – 5:15 pm
Part 2: Saturday, August 6, 1:00 pm – 3:00 pm
Ruidoso, Albuquerque Convention Center
This course will emphasize modeling presidential campaigns and elections and, more generally, the theoretical problems underlying voting and social choices. Topics will include modeling position-taking in two-candidate and multi-candidate races, bandwagon and underdog effects in primaries, voting power in the Electoral College, and election reforms like approval voting.

MINICOURSE #5
GEOMETRY WITH HISTORY FOR TEACHING TEACHERS
David W. Henderson, Cornell University
Daina Taimina, Cornell University
Part 1: Friday, August 5, 3:15 pm – 5:15 pm
Part 2: Saturday, August 6, 3:15 pm – 5:15 pm
Pecos, Albuquerque Convention Center
This workshop will facilitate a hands-on cooperative experience of the geometries of various surfaces (cones, cylinders, spheres, and hyperbolic planes)— studying the intrinsic geometry of these surfaces. We will also explore the interactions (both ways) between geometry and mechanical motions. We will use four historical strands to organize our reflection on the basic geometric notions of Euclidean and non-Euclidean geometry. These explorations enhance our understandings of Euclidean geometry and help to demonstrate a non-axiomatic, non-formal view of mathematics and mathematics learning. Appropriate for all mathematicians teaching teachers. Teaching materials and references to web and paper resources will be provided.

MINICOURSE #6
CONTEMPORARY COLLEGE ALGEBRA: A REFOCUSED COLLEGE ALGEBRA COURSE
Laurette Foster, Prairie View A&M University
Dorothy Hunter, Huston-Tillotson College
Don Small, U.S. Military Academy
Part 1: Friday, August 5, 3:15 pm – 5:15 pm
Part 2: Saturday, August 6, 3:15 pm – 5:15 pm
Ruidoso, Albuquerque Convention Center
This minicourse will take participants on a typical journey through a refocused college algebra program. The trip will include small group project presentations, graphing calculator required assignments, writing assignments, and assessment techniques. Participants will receive a collection of existing small group projects and will create at least one new small group project during the minicourse. Familiarity with a graphics calculator will be helpful but is not a prerequisite.

Short Course

The Short Course function as a two-day miniconference organized around relevant themes and is normally held in conjunction to MathFest. They normally precede or follow MathFest.

TWO-DAY SHORT COURSE
RECREATIONAL MATHEMATICS: A SHORT COURSE IN HONOR OF THE 300TH BIRTHDAY OF BENJAMIN FRANKLIN
Paul C. Pasles, Villanova University
Part 1: Tuesday, August 2, 9:00 am – 5:00 pm
Part 2, Wednesday, August 3, 9:00 am – 5:00 pm
Enchantment Ballroom A/B, Hyatt

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

Lecture 1
Magic Square Magic
Art Benjamin, Harvey Mudd College
The mathemagician invites a member of the audience to join him onstage and to give him any number (typically a number between 50 and 100). The mathemagician then draws a blank 4-by-4 grid, and asks the volunteer to point to the 16 cells in any order. As each cell is pointed to, the mathemagician immediately writes a number in the cell. When the grid is full, the rows, columns, diagonals, and many other groups of 4, will sum to the spectator's number. This impressive feat of mathematical magic is very easy to do, as you will learn. Did you notice that my title is palindromic? All 3-by-3 magic squares have a beautiful, little-known property called "square-palindromicity." To illustrate, using the 3-by-3 magic square

4	9	2
3	5	7
8	1	6

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

Lecture 2
Dürer's Magic Squares, Cardano's Rings, Prince Rupert's Cubes, and Other Neat Things
Professor V. Frederick Rickey, United States Military Academy
Recreational mathematics is as old as mathematics itself, so a survey of its history is out of the question. Instead we discuss a few neat things, setting each in its historical context and explaining their significance. As a benchmark for looking forward and back we shall take Charles Hutton's *Recreations in Mathematics,* which in turn is based on works of Ozanam and Montucla on recreational mathematics.

Lectures 3 & 4
Problem Solving Through Recreational Mathematics
Orin Chein, Temple University
My part of the program will be divided into two sessions. During the first session, at the end of Day 1, I will describe a course in recreational mathematics that we offer at Temple University, and introduce a variety of problems from the text. I will also perform some mathematical card and number tricks for participants to think about. On day two, we will discuss solutions to some of the problems as well as the mathematics behind some of the tricks.

Lecture 5
Over Thirty Years of Alphametics in the *Journal of Recreational Mathematics*
Charles Ashbacher
Editor, *Journal of Recreational Mathematics*
The alphametic, an arithmetic problem where letters represent digits and the letters also create a message, has been a staple problem in the *Journal of Recreational Mathematics* since the first issue was published. The messages are simple, such as the classic SEND+ MORE = MONEY. Solving them is usually an exercise in algebra in combination with trial and error. Solving an alphametic also makes an excellent programming assignment in beginning programming classes, in that they can be solved in a brute force manner by creating a set of nested loops. This presentation will be a demonstration of the various forms of the alphametic and how they are solved. The messages of the alphametics that have been published in the *JRM* over the years have covered a wide area. Everything from political statements to congratulations and condolences has been published as math problems. Some of the more interesting examples of this area of mathematics will also be given.

Lecture 6
How to Change Coins, M&M's, or Chicken Nuggets: The Linear Diophantine Problem of Frobenius
Matthias Beck, San Francisco State University
How many ways are there to change 42 cents? How many ways will there be when all the pennies are gone? How about if nickels were worth four cents? More generally, suppose we have coins of denominations $a_1, a_2, ..., a_d$. Can one find a formula for the number $c(n)$ of ways to change n cents? A seemingly easier question is: can you change n cents, using only our coins? Depending on the culinary preference of the audience, we may state these questions in terms of bags of M&M's or boxes of Chicken Nuggets ("Can you

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

Lecture 7
Magic Squares in the Twenty-First Century
Maya Mohsin Ahmed, University of California - Davis
The problem of constructing magic squares is of classical interest. Enumerating magic squares is a relatively new problem. I will describe how to construct and enumerate magic squares as lattice points inside polyhedral cones using techniques from algebraic combinatorics. I will also look at the correspondence of magic labelings of graphs and symmetric magic squares.

Sandia Peak Aerial Tramway by Jay Blackwood

SIGMAA Sessions

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

SIGMAA ON THE PHILOSOPY OF MATHEMATICS LECTURE BY REUBEN HERSH AND BUSINESS MEETING

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

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

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

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

SIGMAA ON TEACHING ADVANCED HIGH SCHOOL MATHEMATICS

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

SIGMAA ENVIRONMENTAL MATHEMATICS ACTIVITIES

The Environmental Mathematics SIGMAA will sponsor several activities at MathFest 2005 in Albuquerque. There will be a Contributed Paper Session, *Environmental Mathematics* and also a Panel Discussion. Similiar to the Boulder and Providence MathFests, we will have an outdoor activity.

Environmental Mathematics
Ben Fusaro, Florida State University
Bill Stone, New Mexico Institute of Mining & Technology
Thursday, August 4, 1:00 pm – 3:20 pm
Brazos, Albuquerque Convention Center

Conversations About Mathematics and the Environment
Patricia Clark Kenschaft, Montclair State University
Friday, 3:00 pm – 4:20 pm
Brazos, Albuquerque Convention Center
See Panels and Other Sessions for more details.

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

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

EMAIL LAB INFO

Albuquerque Convention Center in the Exhibit Hall

Thursday, August 4th:	**9:00 am - 5:00 pm**
Friday, August 5th:	**9:00 am - 5:00 pm**
Saturday, August 6th:	**9:00 am - 2:00 pm**

take a fresh look at
undergraduate mathematics

visit us in booth #2

Social Events

There are social events planned for every evening of MathFest for all to enjoy. Participants and their guests are welcome to take part in one or all. Some events have tickets which were only available through

SANTA FE SCENIC TOUR & SHOPPING EXTRAVAGANZA
Wednesday, August 3, 9:00 am – 4:00 pm
The historic **Turquoise Trail National Scenic Byway** links Albuquerque and Santa Fe and encompasses 15,000 square miles in the heart of central New Mexico. You will drive back into history through the mining towns of Golden, Madrid, and Cerrillos, whose mines once yielded gold, silver, lead, zinc, and turquoise. During its heyday in the 1880s Cerrillos boasted twenty-one saloons and four hotels. A renewed spirit has brought art, crafts, theater, music, museums, and restaurants to these towns.

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

Lunch will be on your own at one of the many restaurants near the Plaza. Your guide will provide maps and offer suggestions. After lunch you may continue to explore on your own or indulge in a southwestern shopping spree at the many unique specialty stores and galleries around the Plaza. Nearly all the city's main cultural attractions are also within walking distance of the Plaza, including the Georgia O'Keeffe Museum and the Palace of the Governors. **Tickets are not available onsite.**

OPENING RECEPTION
Wednesday, August 3, 6:30 pm – 7:30 pm
Pavilion Court, Hyatt
The Association is pleased to hold a reception with a cash bar for all MathFest participants just prior to the Opening Banquet.

OPENING BANQUET
Wednesday, August 3, 7:30 pm – 9:30 pm
Grand Pavilion, Hyatt
Master of Ceremonies: Annalisa Crannell of Franklin and Marshall College. Continue the exciting evening by joining new and long-time friends and colleagues for dinner. There will be an after-dinner presentation by Joe Gallian, University of Minnesota-Duluth, entitled "Groups, graphs, and graph theory." Joe will explain how group theory and graph theory can be used to create graphic designs in the hyperbolic plane. Tickets are required.

LOS AMIGOS ROUNDUP
Thursday, August 4, 5:30 pm – 9:00 pm
Albuquerque Convention Center Shuttle Stop
(3rd Street Entrance)
A Southwestern banquet located in the Rio Grand Bosque among giant 150-year-old Cottonwood trees. Experience a unique setting indoors in the Banquet Barn as well as an outdoor patio. Enjoy the all-you-can-eat ranch barbecue including hickory grilled prime steak and boneless chicken breast, green chili stew with chuck wagon biscuits, potato salad, ranch beans, and fudge brownies. Dinner includes beer, wine, margaritas, and assorted sodas.

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

A bus will transport you from the Hyatt beginning at 5:30 pm. The ride to the Rio Grand Bosque is 20 minutes. Return trips will be made as buses fill. Only a limited number of tickets will be available onsite.

EXHIBIT HALL RECEPTION
ADDISON-WESLEY
Friday, August 5, 3:00 pm – 4:30 pm
Ballroom A, Albuquerque Convention Center
Visit the exhibit hall for a complimentary food and beverage reception sponsored by Addison-Wesley.

ASSOCIATION OF GAY, LESBIAN, BISEXUAL, AND TRANSGENDERED RECEPTION
Friday, August 5, 5:30 pm – 7:00 pm
Fiesta 3, Hyatt
All are welcome to attend.

PME STUDENT BANQUET
Friday, August 5, 6:00 pm – 7:45 pm
Grand Pavilion, Hyatt
Tickets are $20 for undergraduate students or students presenting in the PME and MAA Student Paper Sessions; and $30 for all others. Only a limited number of tickets will be available for sale onsite.

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

AWM RECEPTION
Friday, August 5, 9:00 pm – 11:00 pm
Grand Pavilion, Hyatt
Plan to attend the cooperative party with the Association for Women in Mathematics on Friday evening following the Frame Lecture. All supporters of women in mathematics are encouraged to attend and to meet AWM members.

SILVER AND GOLD RECEPTION AND BANQUET
Saturday, August 6, 6:00 pm – 9:00 pm
Enchantment Ballroom, Hyatt

At this annual banquet the MAA recognizes individuals who have been long-time members of the Association, with special honors for 25-and 50-year members. All members are welcome to attend. The emcee will be Tina Straley, MAA Executive Director. Alan Tucker of SUNY Stony Brook will speak on "The Mathematical Basis of 'Standards-based' Tests: It Makes Cold Fusion Look Respectable." Alan will recount his experience with his investigations of item response theory he undertook in connection with a massive failure of the New York mathematics graduation test in June 2003.

There will be a cash bar reception beginning at 6:00 pm with the banquet following at 6:30 pm.

Exhibit Hall

Exhibit Hall Information

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

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

Exhibit Hall Reception
Join us for a special reception sponsored by Addison-Wesley on Friday, August 5th from 3:00 pm to 4:30 pm.

LOCATION:
Ballroom A, Albuquerque Convention Center

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

Exhibitors

A K Peters, Ltd.

Addison-Wesley   Sponsor

American Mathematical Society

American Mathematics Competitions

AWM Book Display

Birkhauser Boston, Inc.

Brooks/Cole, Thomson

Cambridge University Press

eInstruction Educational Consultant/Trainer

Elsevier

Hawkes Learning Systems

Houghton Mifflin Company

Key College Publishing   Sponsor

MacKichan Software

Mathematical Associations of America (Publications)

Mathematical Association of America (Membership)

Mathematics Throughout the Curriculum

Navajo Jewelry & Crafts

Prentice Hall

Springer-Verlag New York, Inc.

W.H. Freeman & Company

Wiley

REGISTRATION INFORMATION

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

SHUTTLE INFORMATION
The shuttle for MathFest will run a continuous loop between the University of New Mexico and the Albuquerque Convention Center. Shuttle service will begin on Wednesday, August 3rd at 5:30 pm. Beginning at 6:30 pm the shuttle will provide service to Old Town Albuquerque.

Pick up and drop off locations, days, and times available:

University of New Mexico: Rear entrance (parking lot) of Hokana Residence Hall.

Hyatt Regency and Albuquerque Convention Center: 3rd Street entrance of the Albuquerque Convention Center.

Old Town Albuquerque: Location to be Determined

The shuttle will operate:

Wednesday, August 3rd
Hours: 5:30 pm - 11:30 pm

Route: 5:30 pm -11:30 pm between University of New Mexico
          (UNM)   and the Albuquerque Convention Center (ACC).
          6:30 pm - 11:30 pm between Old Town, UNM, and ACC

Thursday, August 4th through Friday August 6th
Hours: 7:00 am - 11:30 pm.

Route: 7:00 am -10:00 am between UNM and the ACC .
          10:00 am - 6:30 pm between UNM and the ACC.
          6:30 pm - 11:30 pm between UNM, ACC, and Old Town.

Saturday, August 6th
Hours: 7:00 am - 11:30 pm

Route: 7:00 am - 6:30 pm between UNM and the ACC .
          6:30 pm - 11:30 pm between UNM, ACC, and Old Town.

MATHFEST HOUSING

Rooms may be reserved at the Hyatt Regency Albuquerque and the University of New Mexico.

HOTEL

THE HYATT REGENCY ALBUQUERQUE (HEADQUARTERS)
Is located adjacent to the Albuquerque Convention Center.

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

UNIVERSITY OF NEW MEXICO HOUSING

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

Hokana Hall Dormitory

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

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

Check-In

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

DINING

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

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

PARKING

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

DRIVING DIRECTIONS:

From Albuquerque International Airport (ABQ):

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

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

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

CAR RENTAL INFORMATION:

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

www.erac.com. Once onsite, there is an Enterprise Rental Car office located in the lobby of the Hyatt Regency Albuquerque.

PUBLIC TRANSPORTATION:

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

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

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

AIRPORT SHUTTLE & TAXI INFORMATION:

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

These links are provided as a convenience:

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

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

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

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