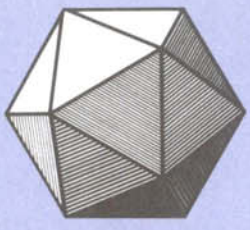

FOCUS

THE NEWSLETTER OF THE MATHEMATICAL ASSOCIATION OF AMERICA

April 1998
Volume 18, Number 4

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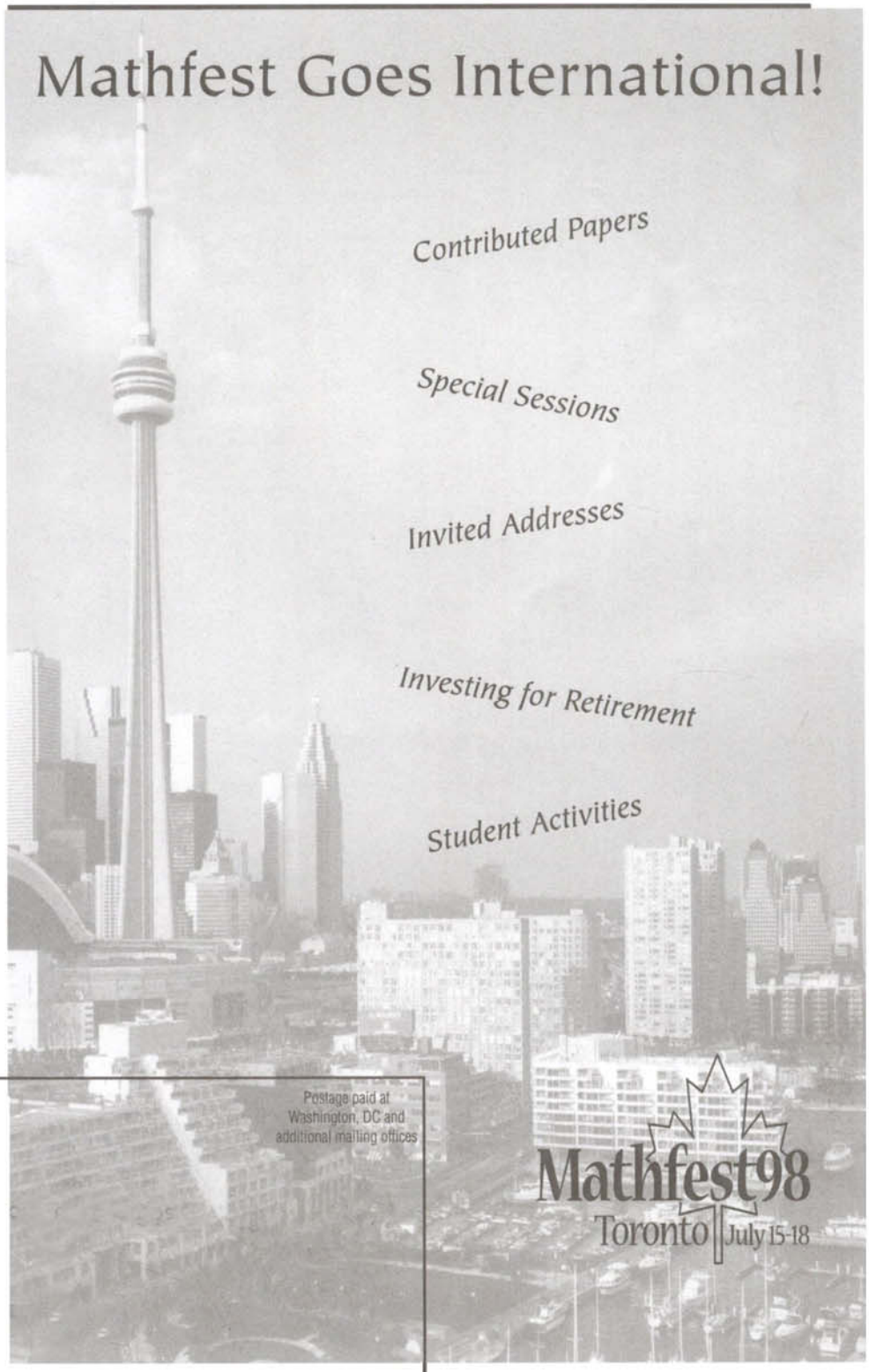

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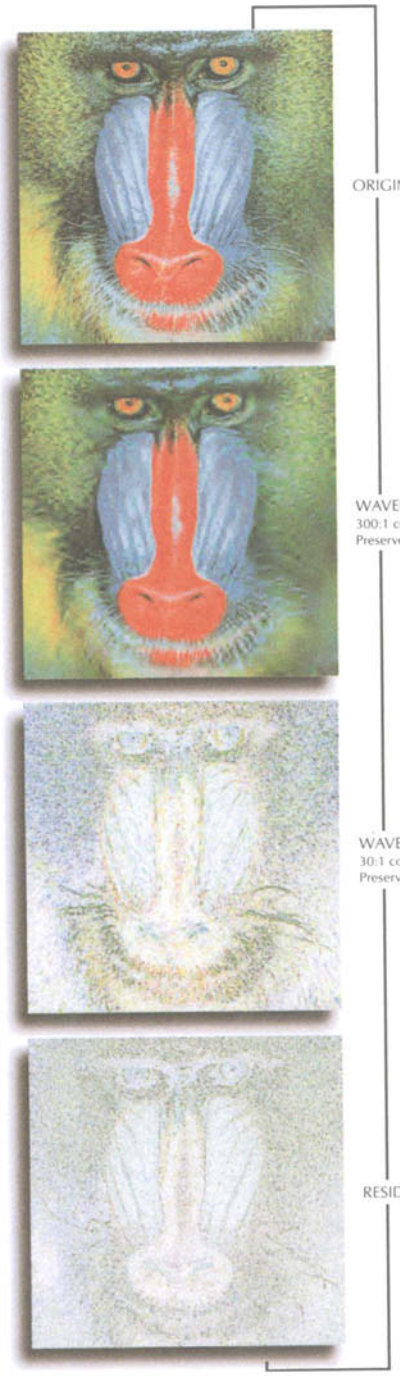


The original image is the sum of the three. Each pulls out different features of the original. We can think of the image as being synthesized by three different instruments, in a way similar to a musical orchestration where the final sound is the sum of the notes from each instrument.

This mathematical transcription is useful for a more efficient and accurate storage and processing of imaging data, but also provides tools for denoising and identifying structure in images. For example, it can sharpen detail in medical images, such as MRI, and be used to identify particular objects for diagnostic purposes.

MATHEMATICS AWARENESS WEEK 1998

April 26–May 2

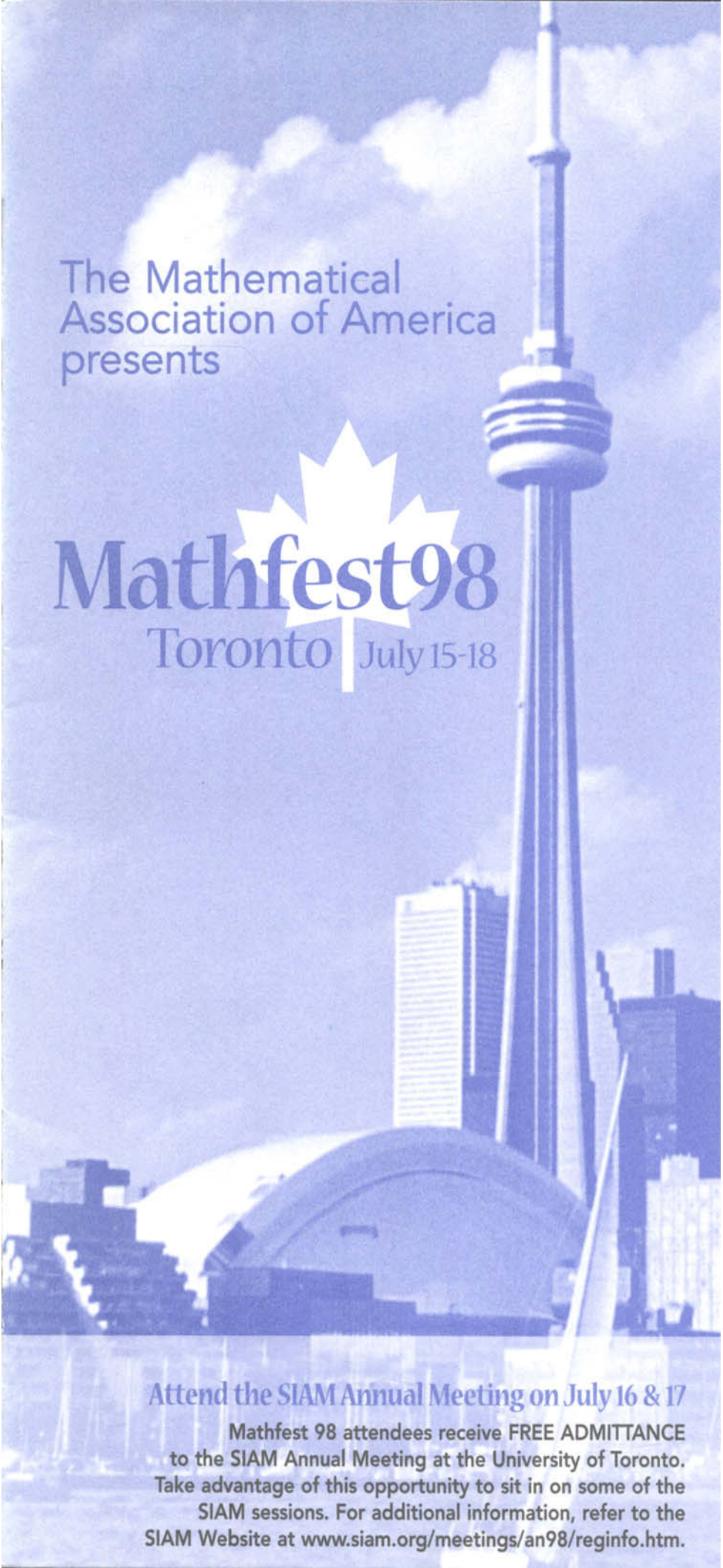
Mathematics & Imaging

Sponsored by the

- **Joint Policy Board for Mathematics:**
  American Mathematical Society
  Mathematical Association of America
  Society for Industrial and Applied Mathematics
- Informs

http://forum.swarthmore.edu/maw/

Images provided by Ronald Coifman, Yale University



Mathfest Goes International!

What's new in collegiate mathematics? Find out when you join colleagues in Toronto at Mathfest 98, July 15-18!

You won't want to miss the Hedrick Lecture Series: Geometric Variational Problems, three lectures by Jean Taylor or Donald Saari speak on The Mathematics of Voting: What Causes Lousy Election Outcomes?; everyone will enjoy Joseph Gallian talk on Breaking Drivers' License Codes and Ross Honsberger on Some Mathematical Morsels.

Looking for other activities? How about the contributed paper session on Multi-media and Mathematics Education, or the minicourse on Cooperative Learning in Undergraduate Mathematics Education, or the special session on Great Theorems of Mathematics, or a workshop on Integrating Active Learning Techniques into Lectures or...dozens of other mathematical sessions, social events, and the charms of Canada in the summer.

Come to the meeting early and attend the Short Course on Mathematics and Magic by Brent Morris and Arthur Benjamin. This is a meeting you want to attend in a place you want to visit. DON'T MISS IT!

Review the descriptions of lectures, sessions, and other events on the inside pages. ***How to Register*** *instructions and forms included. Mathfest 98 information may also be accessed via MAA Online at www.maa.org.*

MATHFEST 98 DEADLINES

Early Bird Registration	May 29
On-Campus Hotel Reservations	June 1
Dormitory Housing Reservations	June 1
Delta Chelsea Inn Reservations	June 11
Regular Registration	June 29
Short Course Registration	June 29
Minicourse Registration	June 29

Invited Addresses

HEDRICK LECTURE SERIES
Jean Taylor Rutgers University
Geometric Variational Problems
Lecture 1: Soap Films
Thursday, 9:30 am-10:20 am
Lecture 2: Crystals
Friday, 9:30 am-10:20 am
Lecture 3: Ice Cubes versus Snow Flakes
Saturday, 9:30 am-10:20 am

AWM-MAA INVITED ADDRESS
Margaret H. Wright Bell Laboratories, Lucent Technologies
The Interior-Point Revolution in Constrained Optimization
Thursday, 3:05 pm-3:55 pm

CMS-FIELDS-MAA INVITED ADDRESS
Leon Glass McGill University
Mathematics Education for the Life Sciences
Thursday, 8:30 am-9:20 am

MAA STUDENT LECTURE
Ross A. Honsberger University of Waterloo
Some Mathematical Morsels
Saturday, 3:05 pm-3:55 pm

NAM-MAA INVITED ADDRESS
Nathaniel Dean Rice University
Network Visualization
Friday, 8:30 am-9:20 am

PI MU EPSILON
J. SUTHERLAND FRAME LECTURE
Joseph A. Gallian University of Minnesota, Duluth
Breaking Drivers' License Codes
Friday, 8:00 pm-9:00 pm

Dorothy Buerk Ithaca College
What We Say, What Students Hear: A Case for Active Listening
Thursday, 10:30 am-11:20 am

Henry O. Pollak Columbia University
Stability and Sensitivity in High School and College Mathematics
Friday, 10:30 am-11:20 am

Liliane Beaulieu Université de Montréal
Bourbaki Choices
Friday, 3:05 pm-3:50 pm

Andrew Odlyzko AT&T Labs
Primes and Zeros of the Zeta Function: Conjectures and Computations
Saturday, 8:30 am-9:20 am

Donald G. Saari Northwestern University
The Mathematics of Voting: What Causes Lousy Election Outcomes?
Saturday, 10:30 am-11:20 am

Special Sessions

feature presentations or panel discussions. The speakers are invited by the organizers and selected because of their knowledge and accomplishments in the focal area of the session.

Models of Mathematical Sciences and their Applications throughout the Curriculum
Lee Zia University of New Hampshire
Frank Giordano COMAP
This is Part 2 of a session (Part 1 will be presented at the SIAM meeting); the two parts are related but not codependent. In this session, presenters will report on innovative models that illustrate the infusion of the mathematical sciences and their applications throughout a course and/or curriculum. Special attention will be paid to working with colleagues from non-mathematical science disciplines during the conceptualization, development, and implementation stages of a project. Sustainability issues will be discussed. Speakers include Michael Moody, Harvey Mudd College; Dan Schwalbe, Macalester College; Daniel P. Maki, Indiana University; and Kurt Bryan, Rose-Hulman Institute of Technology.
Thursday, 1:00 pm-2:50 pm

Teaching Collaborations between 2-year and 4-year Colleges
Bonnie Gold Wabash College
Sheldon P. Gordon SUNY Farmingdale
Teaching collaborations between two- and four-year colleges can have benefits for both schools. These benefits include facilitating student transitions between two-year colleges and the four-year schools at which they finish their undergraduate degrees, and contributing to faculty development at both schools. The panelists, including Jacqueline Giles, Houston Community College; Central College; Doris Schattschneider, Moravian College; and Karen Sharp, Mott Community College, will discuss collaborations of this sort in which they have been involved: how they came about, what the collaboration involved, what the results were, and what pointers they have for making such collaborations work. This panel is sponsored by the Committee on the Teaching of Undergraduate Mathematics (CTUM) and Committee on Two Year Colleges (CTYC).
Thursday, 1:00 pm-2:50 pm

Concurrent Models: Teaching Mathematics while Developing Teaching Skills
Morris Orzech Queens University
Eric Muller Brock University
David Poole Trent University
In this CMS-Fields-MAA panel, the presenters will discuss some models for addressing the initial and ongoing development of teaching skills at various levels, in the context of activity whose primary focus is mathematics.
Thursday, 3:55 pm-5:45 pm

Assessment Alternatives
Janet C. Woodland University of Arkansas
Heather Hulett Miami University (Ohio)
How can we create and evaluate a variety of assignments to encourage and measure student learning, beyond the traditional homework problem sets and quizzes? Examples of some such assignments include: presentations, rewriting textbook selections, peer review of writing assignments, projects, and course portfolios. Invited panelists will provide detailed examples of such assignments and how to grade them; this will be followed by a breakout and discussion session where participants can exchange ideas.
Thursday, 3:55 pm-5:45 pm

The Mathematics Education of Teachers Project
Marjorie Enneking Portland State University
The Mathematics Education of Teachers Project, funded by the US Department of Education, is a joint effort of the mathematical sciences professional societies. The project will set guidelines for the initial mathematics preparation and continuing mathematical development of teachers P-12 and encourage supporting activities to foster the implementation of these recommendations. After a description of progress to date, there will be an open forum to gather suggestions and reactions to be used by the project steering committee and writing team. Sponsored by Committee on the Mathematical Education of Teachers (COMET), the panelists will include W. James Lewis, University of Nebraska, Mary M. Lindquist, Columbia State University, and Gail F. Burrill, NCTM.
Friday, 1:00 pm-2:50 pm

Integrating Active Learning Techniques into Lectures
Sandra L. Rhoades Keene State College
This participatory workshop is for faculty who are interested in learning about and discussing ways to incorporate active learning techniques into lectures. For some people, this may be a beginning step toward moving away from lectures; for others, it is simply a way to increase the effectiveness of their lectures. A wide variety of techniques that require minimal in-class time will be presented and discussed. Workshop participants will be actively involved — little to no lecturing will occur during the workshop.
Friday, 1:00 pm -2:50 pm

Strengthening Under-represented Minority Mathematics Achievement (SUMMA) Programs
William A. Hawkins Director of SUMMA
Presentations on summer mathematics programs for pre-college minority students will be given by project directors Kenneth Bernard, Niagara University, and Eric Muller, Brock University. Jack Narayan, SUNY Oswego, and Florence Fasanelli, director of SUMMA Intervention Programs, will describe the new SUMMA Leadership Program which assists mathematics departments in initiating programs for college and pre-college minority students.
Friday, 4:10 pm-6:00 pm

Strategies to Solve Potential Classroom or Professional Challenges
K. Renee Fister Murray State University
Jennifer Beineke Trinity College
Lisa Lister Bloomsburg University
What would you do if a student or colleague accused you of harassment? Suppose you are in charge of a group and the group is discriminating against one of the members. How would you handle the situation? In this workshop, several such scenarios that could arise in the classroom or workplace will be investigated. Participants will be divided into groups and given sample problem situations. The groups discuss the situations and develop ideas for solutions, and provide a synopsis of a solution to all participants. Then members of the panel will give suggestions based on their experience and expertise.
Friday, 4:10 pm-6:00 pm

Mathematical Software in Education
Robert M. Corless University of Western Ontario
William F. Langford Fields Institute
The purpose of this CMS-Fields-MAA session is to give a timely update, both "from the trenches" and from the viewpoint of software developers, of the impact of mathematical software on mathematics education. Of particular interest are the effects of mathematical software on the content of the curriculum, and on the potential for improvement in learning. The speakers will include Robert M. Corless, University of Western Ontario ("What We Can Do Affects What We Should Teach"), Pal Fischer, University of Guelph ("Maple in the Classroom"), Robert J. Lopez, Rose-Hulman Institute of Technology ("Maple, Laptop Computers, and the Twenty-first Century"), and Lawrence F. Shampine, Southern Methodist University ("ODE Architect").
Saturday, 1:00 pm-2:50 pm

Great Theorems of Mathematics
Douglas Ensley Shippensburg University
Cheryl Olsen Shippensburg University
This session will consist of four talks which address the proof of an important theorem in mathematics. The theorems will be taken from a variety of mathematical disciplines. Each talk will present a proof at a level that is accessible to a general mathematical audience. This session is intended to expose the audience to proofs of theorems that every mathematician should know.
Saturday, 4:10 pm-6:00 pm

Mathematical Modeling Using Pre-calculus Mathematics
Cathy Murphy Purdue University (Calumet)
Philip Quartararo, Jr. Southern University
Panelists, including Daniel Maki, Indiana University, and Diana Fisher, Franklin High School (Portland, OR), will discuss: what they mean by modeling, their experiences with modeling and with teaching modeling, why they believe modeling is important for school teachers to know, how and in what courses they believe modeling should be introduced for preservice teachers, and how and in what courses they believe modeling should be introduced for school level students.
Saturday, 4:10 pm-6:00 pm

She Does Math: Exemplary Women in Mathematics-Related Careers
Carolyn Connell Westminster College of Salt Lake City
Kathleen Sullivan Seattle University
Virginia Knight Meredith College
Women from a variety of professions requiring mathematics and outside academia will speak about their work, their educational backgrounds, and their career paths. Marla Parker, Sun Microsystems, and editor of "She Does Math," will be a member of the panel. She will be joined by other women represented in her book who have mathematics-related careers in business and industry. Sponsored by the Committee on the Participation of Women (CPW).
Saturday, 4:10 pm-6:00 pm

Investing for Retirement Seminar

Conducted by a certified financial planner, this seminar presents financial investment strategies for retirement. Areas of discussion include savings strategies, fighting inflation's effect now and in the future, ways to approach estate planning and protecting assets from inheritance and estate taxes.

Thursday, 3:55 pm-5:45 pm

MAA Contributed Paper Sessions

are organized around a pre-determined topic. Presenters are selected by the paper organizers after reviewing responses to a call for papers.

The Use of Technology in the Teaching of Applications in Undergraduate Mathematics
Howard Lewis Penn US Naval Academy
Elizabeth Teles National Science Foundation
The use of computer programs and calculators have made it much easier to study real world applications in courses ranging from precalculus through senior level mathematics courses. In this session, papers will highlight how the innovative use of technology can be used to aid in the teaching of applications. Papers may cover applications to any subject as well as any level mathematics course.
Part 1: Thursday, 1:00 pm-2:50 pm
Part 2: Friday, 4:10 pm-6:00 pm

Mentoring Mathematics Students
Jean Bee Chan Sonoma State University
Why should students choose to major in mathematics? Why should mathematics majors persist and ultimately succeed as mathematicians? Will they stumble on the first "proof" course? How can faculty guide mathematics majors to reach their maximum potential? Those having had positive experiences attracting students to study mathematics will present their ideas on how to motivate students to persevere and succeed in mathematics.
Part 1: Thursday, 1:00 pm-2:50 pm
Part 2: Friday, 1:00 pm-2:50 pm

Innovative Ideas for Student-Collected Data
Cathy A. Godbois
Harrisburg Area Community College
Sheldon P. Gordon SUNY at Farmingdale
The use of real world data collected from experiments or from student research to motivate the teaching and learning of mathematics, is one of the strong threads that runs through much of the mathematics reform movement. In this session, papers will describe experiences using real world data that motivate both the mathematical development of, and students' appreciation for, the utility of mathematics at any level of the curriculum.
Part 1: Thursday, 3:55 pm-5:45 pm
Part 2: Saturday, 1:00 pm-2:50 pm

Mathematics Across the Disciplines
Duff Campbell U.S. Military Academy
Jim Rolf U.S. Military Academy
There is interest in efforts to move mathematics across the curriculum. Papers in this session will describe interdisciplinary activities that integrate mathematics with one or more partner disciplines. Examples may include one activity, one class, one project, one section, one course, or an entire curriculum, with emphasis on illustrations of specific activities which are transportable. This session is part of the activities of the CUPM subcommittee to promote and disseminate efforts on moving "Mathematics Across the Disciplines."
Part 1: Thursday, 3:55 pm-5:45 pm
Part 2: Saturday, 4:10 pm-6:00 pm

Multimedia and Mathematics Education
Professor Ronald Sklar St. John's University
Richard O'Lander St. John's University
Tingxiu Wang Oakton Community College
Advances in multimedia have created a new means of applying technology to mathematics education. This includes such things as interactive video, CD-ROM technology, hypermedia, hypertext, expert systems, teleconferencing and virtual reality. Technology is changing the way in which mathematics is being taught. Programs have been developed which integrate this technology into the mathematics curriculum. Papers in this session will discuss applications of multimedia to mathematics instruction, as well as the success and failure of such projects.
Part 1: Friday, 1:00 pm-2:50 pm
Part 2: Saturday, 1:00 pm-2:50 pm

Interactive and Dynamic Visualization for Precalculus and Calculus
Martin Flashman Humboldt State University
Many new applications of technology allow interactive and dynamic visualization that enhance student understanding of concepts in both calculus and precalculus courses. Presentations at this session will discuss and illustrate some of the most recent of these applications such as those using real data collection techniques with calculators, animations, and dynamic software such as Geometer's Sketchpad and Cabri.
Friday, 4:10 pm-6:00 pm

Minicourses

offer four hours of focused instruction. Enrollment is limited and a separate registration fee is required. Refer to the Registration Information and the Registration Form for details.

1

Developing Materials for Liberal Arts Mathematics That Use Elementary Graph Theory and Emphasize Applications to Everyday Experience

Helen Christensen Loyola College in Maryland

Content, techniques, and illustrative problems will be presented, suitable for enabling participants to develop materials for a liberal arts mathematics course appropriate to their student population, using a limited amount of theory, and emphasizing day-to-day applications to which students can readily relate. Included, for each type of problem considered, will be a synopsis of relevant theory, demonstration problems with solutions, and participant team solutions of similar problems.

Part A: Thursday, 1:00 pm-2:50 pm
Part B: Friday, 1:00 pm-2:50 pm

2

Fuzzy Neighborhoods and the Fuzzy Unit Interval

Joseph M. Barone BFR Inc.

This course will introduce the subject of fuzzy topology by exploring two subjects which emphasize its role as a generalization of ordinary (point-set) topology: fuzzy neighborhoods and the fuzzy unit interval. For each topic, the course will focus on the relationship between the fuzzy concept and its ordinary counterpart. No special background in topology will be assumed, but some familiarity with set theory and real analysis will be useful. No text will be used; materials and in-class exercises will be distributed at the course.

Part A: Friday, 1:00 pm-2:50 pm
Part B: Saturday, 1:00 pm-2:50 pm

3

Cooperative Learning in Undergraduate Mathematics Education

Barbara Reynolds Cardinal Stritch University
William E. Fenton Bellarmine College

Participants will be introduced to cooperative learning in undergraduate mathematics courses at all levels. Participants will engage in various cooperative learning experiences, work in several different small groups and reflect on ways of forming groups in their own classrooms, discuss issues related to assessment and grading, and talk about potential problems and ways of avoiding or overcoming such problems. No prior experience with cooperative learning is expected. Some readings will be distributed during the course.

Part A: Thursday, 1:00 pm-2:50 pm
Part B: Friday, 4:10 pm-6:00 pm

4

A Hands-On Approach to Geometry

Colm Mulcahy Spelman College

Too often, geometry is presented in an axiomatic way, divorced from reality and real world experiences. Natural curiosity about practical considerations (e.g., symmetry, locations, distances, areas and navigation) can be turned into a genuine desire to learn mathematics when a hands-on, discovery-based approach is taken. In this minicourse, participants will be led on a guided tour of discovery that goes beyond traditional planar geometry: spherical, hyperbolic and projective geometry will all be explored interactively, in a cooperative group-learning environment.

Part A: Friday, 4:10 pm-6:00 pm
Part B: Saturday, 1:00 pm-2:50 pm

EXHIBIT HALL HOURS

Thursday, Friday & Saturday
9:00 am to 5:00 pm

Located in the North Hub of Ryerson Polytechnic University

Shop for new publications and products and revisit old favorites at the **Mathfest 98 Exhibit Hall**. This is your opportunity to review the latest books, play with innovative calculators and preview software. Meet company representatives and receive feedback that will assist you in making purchase decisions.

In the Exhibit Hall, you'll find the popular **MAA Bookstore**. There you can select from MAA's extensive collection of books on mathematics, mathematics education, and related topics. Schedule time to browse through the new titles premiering at Mathfest 98. Purchase books at the meeting and you'll save money with a special discount!

The 2-Day Short Course

precedes Mathfest 98 and requires a separate registration fee. For details, refer to the Registration Form or the Short Course section at MAA Online, www.maa.org.

Calculated Deceptions: Mathematics and Magic

Arthur Benjamin Harvey Mudd College
S. Brent Morris National Security Agency

This course will teach participants mathematically based magic tricks that may be used to motivate mathematical discussions. Taught by professional "mathemagicians," the course will cover a wide range of subjects including: Secrets of Lightning Calculators, Calendar Calculating, Magic Squares, Card Tricks, Card Shuffling, and Fibonacci Numbers. Each trick will be explained, along with its underlying mathematics, ranging from high school math to group theory, probability, and topology. Interested participants will also be given the chance to present their favorite tricks to the group, with the expectation that everyone will leave the course with an actual "bag of tricks" to use in the classroom. Special guest appearances by other magician mathematicians are anticipated.

Tuesday, July 14 and Wednesday, July 15, 8:30 am-5:00 pm

Social Events

Meet and share ideas with your peers at a variety of social events being held at Mathfest 98. You can reserve your tickets by ordering through advanced registration (see Registration Form). Banquet events will offer vegetarian meals if requested on the registration form. Cancellations must be received in writing by June 29 for a 50% refund. No refunds are available after this date.

"Mystic Festival"

Kickoff Mathfest 98 with food and magic! Enjoy a full-course meal with old friends and new colleagues. Brent Morris and Arthur Benjamin will entertain you with a mathematical bag of tricks. The Mystic Festival takes place in the Courtyard of Pitman Hall at Ryerson Polytechnic University. Participants and guests are welcome to attend on Wednesday from 7:00 pm to 10:00 pm. Tickets are $27.

PME Banquet

This annual event will be held on July 17. Tickets are $12 and $20. After the banquet, attend the popular PME J. Sutherland Frame lecture, given this year by Joseph A. Gallian of the University of Minnesota, Duluth on "Breaking Drivers' License Codes."

SIAM BBQ Party

On Thursday, July 16th, SIAM invites Mathfest 98 attendees to a Canadian Style BBQ at the SIAM Annual Meeting. The BBQ will be held at the University of Toronto. Reservations are required and admission is by ticket only. Contact SIAM for ticket price and registration information at www.siam.org/meetings/an98/reginfo.htm.

MAA 25-Year Member Banquet

with Peter Rosenthal speaking on "Why I'd Rather be a Mathematician than a Lawyer"
Rosenthal is a University of Toronto Professor of Mathematics and a Barrister with Roach, Schwartz & Associates

Moderated by
Doris Schattschneider Moravian College
Saturday, 6:30 pm-9:00 pm

The 21st annual banquet honors those individuals who have been members of the MAA for 25 years or more. There will be a reception prior to the banquet in the Mountbatten Ballroom at the Delta Chelsea Inn. Tickets are $35.

AWM Reception

Plan to attend this cooperative party with the Association for Women in Mathematics on Thursday at 9:00 pm, in the Oakham House at Ryerson! All supporters of women in mathematics are encouraged to attend and to meet AWM members.

MATHFEST 98 DEADLINES

Early Bird Registration
May 29

•

On-Campus Hotel Reservations
June 1

•

Dormitory Housing Reservations
June 1

•

Delta Chelsea Inn Reservations
June 11

•

Regular Registration
June 29

•

Short Course Registration
June 29

•

Minicourse Registration
June 29

Student Activities

Students and faculty will be interested in presentations of student work in sessions sponsored by the MAA and PME, and in the Invited Lectures developed with students in mind. Starting with a student reception on Wednesday night, Mathfest 98 includes a rich array of activities for students. At the Student Hospitality Center — open Thursday through Saturday — students and other Mathfest attendees can meet for informal conversation, refreshments, and mathematical diversions. The Hospitality Center also provides programs for the student paper sessions, packets for students presenters, and information on Mathfest activities of interest to students. Special information for students can be found on MAA Online at www.maa.org.

MAA/Pi Mu Epsilon Student Reception
Wednesday, 5:30 pm-6:30 pm

MAA and Pi Mu Epsilon Student Paper Sessions
Thursday, 1:00 pm-5:00 pm
Friday, 1:00 pm-5:00 pm

Pi Mu Epsilon Banquet
Friday, 6:15 pm-7:45 pm
See the Mathfest Registration Form for ticket information.

PI MU EPSILON J. SUTHERLAND FRAME LECTURE
Joseph A. Gallian University of Minnesota, Duluth
Breaking Driver's License Codes
Friday, 8:00 pm-9:00 pm

MAA STUDENT WORKSHOP
Mathematics in Stone and Bronze:
Mathematical Problems Associated with Doing Mathematical Sculpture
Helaman Ferguson
This workshop will consist of two parts. The first part will be an interactive lecture with slides and video, giving general background and descriptions of various sculptures. Mathematical problems originating in the sculptural process — which can be qualitative or quantitative — will be set up. The second part will be even more interactive: some of the problems raised will be solved, old solutions will be discussed, new solutions entertained, and perhaps some problems will be solved for the first time!
Saturday, 1:00 pm-2:50 pm

MAA STUDENT LECTURE
Ross A. Honsberger University of Waterloo
Some Mathematical Morsels
Saturday, 3:05 pm-3:55 pm

STUDENT PROBLEM SOLVING COMPETITION
Richard Neal University of Oklahoma
Saturday, 4:10 pm-5:00 pm
This is the finals for The Problem Solving Competition. Universities and colleges that participate monthly on their own campuses by holding problem solving contests are invited to send two contestants. Each contestant will be required to solve a series of mathematics problems. Based upon the outcome, national champion and national runner-up will be named.

Call for Student Papers

Students who wish to present a paper at Mathfest 98 must be nominated by a faculty advisor familiar with the work to be presented. Students who make presentations at Mathfest 98, and who are also members of MAA Student Chapters are eligible for partial travel reimbursement through a grant from the Exxon Education Foundation.

To propose a paper for presentation, students must complete a form and obtain the signature of a faculty sponsor. Nomination forms are located on MAA Online at www.maa.org under STUDENTS, or can be obtained from Dr. Charles Diminnie via email at charles.diminnie@angelo.edu or by phone at (915) 942-2317, ext. 238. Deadline for receipt of papers is June 12, 1998.

ALL PRICES QUOTED IN CANADIAN DOLLARS

Name _____

Address _____

City _____ State/Province _____ Zip/Postal Code _____

Telephone _____ Fax _____ Email _____

☐ **Pitman Hall** singles only **AMOUNT**

$47.00 x _____ # days = $ _____

☐ **I.C.C.** single/double: $61.00 triple/quad: $69.00

$____ x _____ # days = $ _____

Room rates quoted above are subject to the Goods and Services Tax (GST) and the Provincial Sales Tax (PST).

Date of arrival: _____ *Check-in begins after 2:00 pm.*

Date of departure: _____ *Check-out must be before 11:00 am.*

Parking required? ☐ Yes ☐ No

Rates are $10.50 per day, $28.75 for 3 days, and $57.50 per week. $ _____

GRAND TOTAL: $ _____

Credit Card Information *Visa, MasterCard, Discover, Novus*

Card Number _____

Card Type _____

Expiration Date _____

Signature _____

Name on Card _____

- Visa, MasterCard, Discover, Novus and travellers cheques accepted.
- Personal checks are not accepted.
- Advanced payment must be received to guarantee room reservations.
- Cash is accepted at the check-in desk. Do not send cash via mail.
- Confirmations will be sent by mail, if reservation is made in a timely manner.
- Fax confirmations available upon request. ☐ Check here if a fax confirmation is desired.
- Cancellation must be received at least 24 hours prior to check-in to avoid room charges for the period of your reservations.

FAX (CREDIT CARD ORDERS ONLY) OR MAIL HOUSING FORM TO:
Conference Services
Ryerson Polytechnic University
160 Mutual Street
Toronto, Ontario M5B 2M2
Canada
FAX: (416) 979-5212

Mathfest98
Toronto July 15-18

Program-at-a-Glance

INVITED ADDRESSES	SPECIAL SESSIONS	MINICOURSES	STUDENT ACTIVITIES	CONTRIBUTED PAPER SESSIONS	GENERAL ACTIVITIES
			MAA-Pi Mu Epsilon Student Reception 5:30 pm-6:30 pm		**Board of Governors Meeting** 8:00 am-5:00 pm **Registration** 12:00 am-7:00 pm **Mystic Festival** 7:00 pm-10:00 pm
CMS-Fields-MAA Lecture Mathematics Education for the Life Sciences Leon Glass 8:30 am-9:20 am **Hedrick Lecture 1: Soap Films** Jean Taylor 9:30 am-10:20 am **What We Say, What Students Hear: A Case for Active Listening** Dorothy Buerk 10:30 am-11:20 am **AWM-MAA Lecture The Interior-Point Revolution in Constrained Optimization** Margaret H. Wright 3:05 pm-3:55 pm	**Models of Mathematical Sciences and Their Application Throughout the Curriculum** Lee Zia, Frank Giordano 1:00 pm-2:50 pm **Teaching Collaborations Between 2-year and 4-Year Colleges** Bonnie Gold, Sheldon P. Gordon 1:00 pm-2:50 pm **Concurrent Models: Teaching Mathematics While Developing Teaching Skills** Morris Orzech, Eric Muller, David Poole 3:55 pm-5:45 pm **Assessment Alternatives** Janet C. Woodland, Heather Hulett 3:55 pm-5:45 pm	**Developing Materials for Liberal Arts Mathematics That Use Elementary Graph Theory and Emphasize Applications to Everyday Experience, Part A** Helen Christensen 1:00 pm-2:50 pm **Cooperative Learning in Undergraduate Mathematics Education, Part A** Barbara Reynolds, William E. Fenton 1:00 pm-2:50 pm	**Student Hospitality Center** 9:00 am-5:00 pm **MAA & PME Student Paper Sessions** 1:00 pm-5:00 pm	**The Use of Technology in the Teaching of Applications in Undergraduate Mathematics, Part 1** Howard Lewis Penn, Elizabeth Teles 1:00 pm-2:50 pm **Mentoring Mathematics Students, Part 1** Jean Bee Chan 1:00 pm-2:50 pm **Innovative Ideas for Student-Collected Data, Part 1** Cathy A. Godbois, Sheldon P. Gordon 3:55 pm-5:45 pm **Mathematics Across the Disciplines, Part 1** Duff Campbell, Jim Rolf 3:55 pm-5:45 pm	**Registration** 8:00 am-4:00 pm **PME Council Meeting** 9:00 am-12:00 pm **Exhibit Hall** 9:00 am-5:00 pm **Investing for Retirement Seminar** 3:55 pm-5:45 pm **AWM Reception** 9:00 pm
NAM-MAA Lecture Network Visualization Nathaniel Dean 8:30 am-9:20 am **Hendrick Lecture 2: Crystals** Jean Taylor 9:30 am-10:20 am **Stability and Sensitivity in High School and College Mathematics** Henry O. Pollak 10:30 am-11:20 am **Bourbaki Choices** Liliane Beaulieu 3:05 pm-3:50 pm	**The Mathematics Education of Teacher Project** Marjorie Enneking 1:00 pm-2:50 pm **Integrating Active Learning Techniques into Lectures** Sandra L. Rhoades 1:00 pm-2:50 pm **SUMMA Programs** William A. Hawkins 4:10 pm-6:00 pm **Strategies to Solve Potential Classroom or Professional Challenges** K. Renee Fister, Jennifer Beineke, Lisa Lister 4:10 pm-6:00 pm	**Developing Materials for Liberal Arts Mathematics That Use Elementary Graph Theory and Emphasize Applications to Everyday Experience, Part B** Helen Christensen 1:00 pm-2:50 pm **Fuzzy Neighborhoods and the Fuzzy Unit Interval, Part A** Joseph M. Barone 1:00 pm-2:50 pm **Cooperative Learning in Undergraduate Mathematics Education, Part A** Barbara Reynolds, William E. Fenton 4:10 pm-6:00 pm **A Hands-on Approach to Geometry, Part A** Colm Mulcahy 4:10 pm-6:00 pm	**Student Hospitality Center** 9:00 am-5:00 pm **MAA & PME Student Paper Sessions** 1:00 pm-5:00 pm **PME Banquet** 6:00 pm-7:45 pm **Pi Mu Epsilon J. Sutherland Frame Lecture: Breaking Drivers' License Codes** Joseph A. Gallian 8:00 pm-9:00 pm	**Mentoring Mathematics Student, Part 2** Jean Bee Chan 1:00 pm-2:50 pm **Multimedia & Mathematics Education, Part 1** Ronald Sklar, Richard O'Lander, Tingxiu Wang 1:00 pm-2:50 pm **The Use of Technology in the Teaching of Applications in Undergraduate Mathematics, Part 2** Howard Lewis Penn, Elizabeth Teles 4:10 pm-6:00 pm **Interactive and Dynamic Visualization for Precalculus and Calculus** Martin Flashman 4:10 pm-6:00 pm	**Registration** 8:00 am-4:00 pm **Exhibit Hall** 9:00 am-5:00 pm **MAA Award Session** 11:30 am-12:00 noon
Primes and Zeros of the Zeta Function: Conjectures and Computation Andrew Odlyzko 8:30 am-9:20 am **Hedrick Lecture 3: Ice Cubes vs. Snow Flakes** Jean Taylor 9:30 am-10:20 am **The Mathematics of Voting; What Causes Lousy Election Outcomes?** Donald G. Saari 10:30 am-11:20 am	**Mathematical Software in Education** Robert M. Corless, William F. Langford 1:00 pm-2:50 pm **Great Theorems of Mathematics** Douglas Ensley, Cheryl Olsen 4:10 pm-6:00 pm **Mathematical Modeling Using Pre-calculus Mathematics** Cathy Murphy, Phillip Quartararo, Jr. 4:10 pm-6:00 pm **She Does Math: Exemplary Women in Mathematics-Related Careers** Virginia Knight, Carolyn Connell, Kathleen Sullivan 4:10 pm-6:00 pm	**Fuzzy Neighborhoods and the Fuzzy Unit Interval, Part B** Joseph M. Barone 1:00 pm-2:50 pm **A Hands-on Approach to Geometry, Part B** Colm Mulcahy 1:00 pm-2:50 pm	**Student Hospitality Center** 9:00 am-5:00 pm **Workshop: Mathematics in Stone and Bronze: Mathematical Problems Associated with Doing Mathematical Sculpture** Helaman Ferguson 1:00 pm-2:50 pm **MAA Student Lecture: Some Mathematical Morsels** Ross A. Honsberger 3:05 pm-3:55 pm **Student Problem Solving Competition** Richard Neal 4:10 pm-5:00 pm	**Innovative Ideas for Student-Collected Data, Part 2** Cathy A. Godbois, Sheldon P. Gordon 1:00 pm-2:50 pm **Multimedia & Mathematics Education, Part 2** Ronald Sklar, Richard O'Lander, Tingxiu Wang 1:00 pm-2:50 pm **Mathematics Across the Disciplines, Part 2** Duff Campbell, Jim Rolf 4:10 pm-6:00 pm	**Registration** 8:00 am-4:00 pm **Exhibit Hall** 9:00 am-5:00 pm **MAA Business Meeting** 11:30 am-12:00 noon **MAA 25-Year Member Banquet** 6:30 pm-9:00 pm

7/15 WEDNESDAY

7/16 THURSDAY

7/17 FRIDAY

7/18 SATURDAY

Registration Information

Ryerson Polytechnic University, Mathfest headquarters, is located in downtown Toronto, a city with approximately 3.5 million residents. The average July temperature is 72° F/22.1° C. The weather can vary from pleasantly warm to summery hot and humid with the possibility of sudden thunderstorms.

How to Register for Mathfest 98

The Windsor Company, Inc., the official management firm for Mathfest 98, will coordinate arrangements and registration. (Note: "The Windsor Company" will appear on your credit card statement.)

Early Bird Registration: Register by May 29 to take advantage of the early bird savings and receive your registration packet before the meeting. Registration packets will be mailed on June 19 and there will be no need to register once you arrive.

Regular Registration: Registration forms received between May 30 and June 29 must include the regular registration fee. Registration packets must be picked up at the registration desk. You may also register on-site at the registration desk.

Online Registration: Register on the internet to receive instant confirmation by email! Go to www.maa.org and click on "Register for Mathfest 98." Complete the form and payment information. Payment accepted by the following credit cards only: MasterCard, Visa, American Express, Discover, and Novus.

Minicourse/Short Course Registration: Advance registration forms must be received by June 29. Enroll early, space is limited! If a course is full, you will be notified. On-site registration allowed if enrollment permits. The MAA reserves the right to cancel courses due to low enrollment. Full refunds will be issued for cancelled courses.

Registration Desk: Located in the Center Hub at Ryerson Polytechnic University, registration opens Wednesday from noon to 7:00 pm. Thursday through Saturday hours will be 8:00 am to 4:00 pm. You may pick up and purchase event tickets at this location.

Mail-in Registration: Make checks payable to *The Windsor Company.* Checks must be made in U.S. funds and drawn on a U.S. bank. Completed forms with credit card information may be faxed. Mail/fax forms to:

The Windsor Company, Inc.
5600 General Washington Dr., Ste B-201
Alexandria, VA 22312
Phone: (703) 642-9385
Fax: (703) 642-9382
Email: mhollis@windsor-inc.com

Registration forms with insufficient payment will be returned or assessed a $5US charge for production of an invoice to collect the delinquent amount. A $25US penalty will be charged for returned checks.

Refund Policy: Cancellations must be received in writing by June 29 for a 50% refund on registration and event tickets. Send requests to The Windsor Company.

Mathfest Housing

Rooms are reserved at the Delta Chelsea Inn, and two facilities at Ryerson: International Conference Center (I.C.C.) and Pitman Hall. You must contact these facilities directly for reservations. Prices are quoted in Canadian dollars and are subject to taxes. (See Currency Exchange/Goods and Services Tax (GST) section for more information.)

Delta Chelsea Inn: Located near Ryerson Polytechnic University. For reservations, call 1-800-CHELSEA (1-800-243-5732). Mention code GBMAA and The Mathematical Association of America to receive the special rates for Mathfest: single: $159.00CAN; double: $179.00CAN.

Ryerson University Housing: Pitman Hall provides dorm housing with single rooms only. The I.C.C. offers low-budget housing in the on-campus hotel facility. A small portion of room rates subsidize charges for meeting space. Pitman Hall: $47.00CAN; The I.C.C.: single/double: $61.00CAN, triple/quad (limited availability): $69.00CAN.

To make reservations at Pitman Hall or the I.C.C., complete the Ryerson Conference Housing Form enclosed. The form may be mailed or faxed to:

Conference Services
Ryerson Polytechnic University
Pitman Hall
160 Mutual Street
Toronto, Ontario M5B 2M2
Canada
FAX: (416) 979-5212

Travel Information

Airline: Air Canada, the official airline for Mathfest 98, offers non-stop service from over 40 U.S. cities. To take advantage of special Mathfest fares, you must travel round-trip on an Air Canada or United Airlines flight that shares service with Air Canada. For reservations, call Travel Unlimited at 1-800-444-7176 or Air Canada at 1-800-361-7585. Mention Mathfest Event Number CV987017 for special rates.

Travel from Airport: Toronto (Pearson) Airport, located about 40 minutes from downtown, has three terminals. Taxis service, regular transit buses to the subway, and feeder (shuttle) buses go to downtown hotels. One-way taxi fares are $35-$45CAN. Feeder buses to downtown leave every 20 minutes. One-way fare: $12.50CAN. Also, you may take a regular transit bus, ($6.75-$8.00CAN) to the subway. The subway ($2CAN one-way) goes to both Ryerson and the Delta Chelsea. For more information, call Tourism Toronto at (800) 363-1990 or visit their web site at www.tourism-toronto.com.

Meal Information: You may dine at Ryerson's two dining facilities in Pitman Hall or in the I.C.C. The I.C.C. cafeteria resembles a restaurant; prices are average and vary based on menu. Operation hours and meal prices:

Pitman Hall: 7:30 am to 2:30 pm, M-F
Breakfast $4.50CAN
Lunch $9.00CAN

I.C.C.: 7:30 am to 9:30 pm daily
Continental Breakfast $4.75CAN
Buffet Breakfast $6.95CAN
Lunch $6.00CAN
Dinner $12.00CAN

Parking: Passes may be purchased upon arrival from the Pitman Hall Front Desk: $10.50CAN per day, $28.75CAN for three days, and $57.50CAN per week. A 24-hour access card, which must be returned, will be issued. (A refundable $20.00CAN deposit is required.) Parking is also available at the 160 Mutual Street and Victoria/Dundas garages.

Currency Exchange/Goods and Services Tax (GST): The exchange rate is approximately $1.00US to $1.35CAN. Rates vary, so you should check the exchange rate before you leave for Mathfest.

We recommend exchanging some money before leaving for the meeting. For best rates, you should do so at a financial institutions, such as a bank, trust company or currency exchange. Currency exchanges are located at most major airports.

The GST = 7% of the total purchase in most Canadian provinces. As a visitor, you can request a refund for GST on housing accommodations and most goods you take home. The GST on meals and beverages, wine, beer, liquor, tobacco products, transportation, and some services is non-refundable. Further information about the GST and refund applications will be available at Mathfest Registration Desk.

DEADLINES Early Bird Registration: May 29 Regular Registration: June 29 50% Refund on Registration and Event Ticket Cancellation: June 29

First/Last Name (for badge) _____ College/University/Company _____

Address _____

City _____ State/Province _____ Zip/Postal Code _____

Telephone _____ Fax _____ Email _____

Guest badge _____ Guest badge _____

PLEASE NOTE CHARGE PER GUEST REGISTRATION BELOW

REGISTRATION FEES

(All prices quoted in US dollars)

MATHFEST	Early by 5/29	Regular by 6/29 & onsite	Amount	Subtotal
☐ **Member** ☐ MAA ☐ CMS ☐ Both	$155	$202	_____	
☐ **Nonmember**	$240	$312	_____	
☐ **Graduate Student & Others** including unemployed individuals, individuals from developing nations, K through 12 teachers and librarians	$ 39	$ 49	_____	
☐ **Undergraduate Student**	$ 22	$ 27	_____	
☐ **Guest**	$ 10	$ 10	_____	
☐ **One Day Registration**	$121	$121	_____	
				_____

SHORT COURSE: CALCULATED DECEPTIONS — MATHEMATICS AND MAGIC

You NEED NOT be registered for Mathfest to attend the Short Course.

☐ Student	$ 50	$60	_____	
☐ MAA Member and Mathfest Participant	$125	$140	_____	
☐ Nonmember or Mathfest Nonparticipant	$175	$190	_____	
				_____

MINICOURSES

To register for a Minicourse, you MUST be registered for Mathfest.

☐ Developing Materials for Liberal Arts Mathematics	$ 49	_____	
☐ Cooperative Learning in Undergraduate Mathematics Education	$ 49	_____	
☐ Fuzzy Neighborhoods and the Fuzzy Unit Interval	$ 49	_____	
☐ A Hands-On Approach to Geometry	$ 49	_____	
			_____

SOCIAL EVENTS	#Vegetarian Tickets	#Regular Tickets		
☐ Opening Event: "Mystic Festival"	___ &/or	___ x	$ 27	_____
☐ 25-Year Member Banquet	___ &/or	___ x	$ 35	_____
☐ PME Banquet: PME members & family, MAA Student Chapter members & MAA student paper presenters	___ &/or	___ x	$ 12	_____
☐ PME Banquet: All others	___ &/or	___ x	$ 20	_____

GRAND TOTAL ENCLOSED ☐

Indicate method of payment at right. →

HOUSING

For The Delta Chelsea Inn call 1-800-CHELSEA. Mention code GBMAA and The Mathematical Association of America for special rates. **For the I.C.C. or Pitman Hall**, complete the Ryerson Housing form enclosed. Forms may be mailed or faxed to: *Conference Services, Ryerson Polytechnic University, Pitman Hall, 160 Mutual St. Toronto, Ontario M5B 2M2, Canada. Fax (416) 979-5212.*

☐ Please indicate if you need additional assistance to fully participate in Mathfest 97. You will be contacted by The Windsor Company.

Do you want your registration packet mailed in advance? ☐ Yes ☐ No

If yes, please provide your mailing address if different from above:

_____

_____

_____

Packets will be mailed June 19. You DO NOT need to check-in at the Registraion Desk if your packet is mailed.

FAX (CREDIT CARD ORDERS ONLY) OR MAIL REGISTRATION FORMS TO:

The Windsor Company
5600 General Washington Drive, Suite B-201
Alexandria, VA 22312
Phone: (703)642-9385 • Fax: (703)642-9382
Email: mhollis@windsor-inc.com

METHOD OF PAYMENT

☐ **CHECK**

Make checks payable to The Windsor Company. Payment must be in U.S. Funds and drawn on a U.S. Bank. A $25 fee will be charged for returned checks.

☐ **CREDIT CARD**

Note "The Windsor Company" will appear on your statement.

Visa, Master Card, Discover, Novus

Card Number _____

Card Type _____

Expiration Date _____

Signature _____

Name on Card _____

New for 1998

Register for Mathfest 98 Online!

Receive instant confirmation when you register online. Here's how to do it:

1. Go to **MAA Online** at www.maa.org
2. Click on **Register for Mathfest 98**
3. Complete the form and payment information

It's that simple!

No phone call needed or form to mail. You will receive an email immediately to confirm your registration.

MATHFEST 98 DEADLINES

Early Bird Registration	May 29
On-Campus Hotel Reservations	June 1
Dormitory Housing Reservations	June 1
Delta Chelsea Inn Reservations	June 11
Regular Registration	June 29
Short Course Registration	June 29
Minicourse Registration	June 29

EMPLOYMENT OPPORTUNITIES

LOUISIANA

LOUISIANA TECH UNIVERSITY
Mathematics and Statistics

The College of Engineering and Science invites applications for possible non-tenure-track positions at the rank of instructor and tenure-track positions at the rank of assistant professor commencing Fall 1998. Rank and salary will be commensurate with qualifications. Excellent credentials are required. Teaching duties will be primarily at the freshman and sophomore levels. The Mathematics and Statistics Program offers a B.S., an M.S., and is a major participant in the interdisciplinary Applied Computational Analysis and Modeling Ph.D. program. Please send a letter of application, curriculum vitae, and a list of three professional references to: Dr. James Nelson, Associate Dean for Undergraduate Studies, College of Engineering and Science, Louisiana Tech University, Ruston, LA 71272-0046. Applications will be accepted until the positions are filled. Louisiana Tech University is an equal opportunity, affirmative action employer. Women and minorities are encouraged to apply.

NEW YORK

BRONX COMMUNITY COLLEGE OF CUNY

The Department of Mathematics and Computer Science invites applications for anticipated tenure track positions starting in September, 1998. A Ph.D. in mathematics or computer science is preferred although enrollment in a doctoral program is desirable in its absence. Candidates must have a record of and commitment to excellence in teaching and continue scholarly activity. The department has 26 full-time and 55 part-time faculty members. Courses offered range from developmental to upper level mathematics and computer science. Bronx Community College encourages applications from women and minority candidates and is an AA/EOE. Send a letter of application, a statement of teaching philosophy, resume, graduate transcript(s), and three recent letters of reference (at least one should address teaching) to:

Prof. Germana Glier
Chair, Mathematics and Computer Science
Bronx Community of CUNY
University Ave. and West 181 St.
Bronx, NY 10453

ROCKY MOUNTAIN MATHEMATICA

Join us this summer for a Mathematica workshop in the beautiful and cool mountain environment of Silverthorne, Colorado, located 9000 feet above sea level. From July 6-11, 1998, Ed Packel (Lake Forest College) and Stan Wagon (Macalester College), both accredited Wolfram Research instructors with much experience, teach an introductory course (for those with modest or no Mathematica background) and an intermediate course. Both courses have a strong emphasis on the use of Mathematica in mathematics education, covering applications to calculus and a wide variety of other undergraduate courses. For a registration form or more detailed information, contact us (packel@math.lfc.edu, (847) 735-5155; wagon@macalester.edu, (612) 696-6057) or visit our web site (http://math.lfc.edu/Rocky_Mtn_Mathematica).

Participants may obtain graduate credit from the University of Colorado for completing the course.

Take things at face value
and they may come back
to bite you.

Some things aren't what they seem - and that can be truly *scary if it's your insurance plan. But MAA members don't have to make assumptions. Our group plans are cunningly chosen for you; there won't be any surprises. If something seems funny about your insurance, call us at 800 424-9883, or in Washington, DC at 202 457-6820. We promise you a plan you can believe in. At rates that won't eat you up.*

Term Life
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High Limit Accident
Disability Income Protection
Comprehensive HealthCare
Catastrophe Major Medical

INSURANCE FOR MAA MEMBERS

This plan is administered by Seabury & Smith, a Marsh & McLennan Company.
The comprehensive healthcare plan plans is underwritten by the New York Life Insurance Company, 51 Madison Avenue, New York, NY 10010, on Policy Form GMR.

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TEXAS INSTRUMENTS