

# Join Us in Portland, OR

# MathFest

## August 6 – 8, 2009

If you joined us in Madison last summer, you already know what a great meeting MathFest is. But even if you've never been to MathFest, I hope you'll plan to join us in Portland this summer. We have an excellent program lined up. The Hedrick Lectures, "Classical Structure in Modern Geometry, or Modern Structure in Classical Geometry," will be delivered by Ravi Vakil. Look for details, as well as descriptions of all of the invited lectures, starting on page 22.



Of course, there will also be a short course, minicourses and many other sessions where you can learn about all things mathematical. There are opportunities for you and your students to share what you've been working on as well as travel grants for both graduate and undergraduate students who present a paper or poster.

Besides the scientific sessions, Portland is a great city to bring your family and get together with friends, old and new. Look over the schedule, and check the MathFest website, [www.maa.org/MathFest](http://www.maa.org/MathFest), for details of social events, tours and other local attractions to enjoy during your visit. And don't miss the second annual MathFest 5K, which will be held along the banks of the Willamette River, immediately adjacent to the convention headquarters.



*David Bressoud*  
MAA President

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## Invited Addresses

### Earl Raymond Hedrick Lecture Series

#### Classical Structure in Modern Geometry, or Modern Structure in Classical Geometry

Ravi Vakil, *Stanford University*



One of the beauties of mathematics is the fact that many themes run through the subject, over many centuries. Many classical ideas continue to bear fruit in modern contexts, and modern ideas can still shed new light on classical problems. The Hedrick series will explore this in geometry. This series is intended for a general mathematical audience, and the talks will be independent.

#### Lecture 1: *The Mathematics of Doodling*

Thursday, August 6, 10:30 a.m. – 11:20 a.m.

Doodling has many mathematical aspects: patterns, shapes, numbers, and more. Not surprisingly, there is often some sophisticated and fun mathematics buried inside common doodles. I'll begin by doodling, and see where it takes us.

#### Lecture 2: *Murphy's Law in Geometry*

Friday, August 7, 9:30 a.m. – 10:20 a.m.

When mathematicians consider their favorite kind of object, the set of such objects often has a richer structure than just a set — often some sort of geometric structure. For example, it may make sense to say that one object is “close to” another. As another example, solutions to equations (or differential equations) may form manifolds. These “moduli spaces” often are hoped to behave well (for example be smooth). I'll explain how many ones algebraic geometers work with are unexpectedly as far from smooth as they possibly can be.

#### Lecture 3: *Generalizing the Cross Ratio: The Space of $n$ Points on the Projective Line*

Saturday, August 8, 9:30 a.m. – 10:20 a.m.

Four ordered points on the projective line, up to projective equivalence, are classified by the cross ratio, a notion introduced by Cayley in the 19th century. This

theory can be extended to more points, leading to one of the first important examples of an invariant theory problem, studied by Kempe, Hilbert, and others. Instead of the cross ratio (a point on the projective line), we get a point in a larger projective space, and the equations necessarily satisfied by such points exhibit classical combinatorial and geometric structure. For example, the case of six points is intimately connected to the outer automorphism of  $S_6$ . Much of the talk will be spent discussing the problem, and an elementary graphical means of understanding it. This is joint work with Ben Howard, John Millson, and Andrew Snowden.

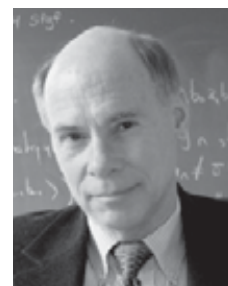
### MAA Invited Address

#### Predicting Values of Arbitrary Functions

Alan Taylor, *Union College*

Thursday, August 6

8:30 a.m. – 9:20 a.m.



To what extent is a function's value at a point  $x$  of a topological space determined by its values in an arbitrarily small (deleted) neighborhood of  $x$ ? For continuous functions, the answer is typically “always” and the method of prediction of  $f(x)$  is just the limit operator. Chris Hardin and I generalized this observation on limits to the case of an arbitrary function mapping a topological space to an arbitrary set, and showed that the best one can ever hope to do is to predict correctly except on a scattered set. Moreover, we produced a predictor whose error set is always scattered. In this talk, we outline the proofs of these two theorems and then derive some of the main results from our two earlier papers, “An introduction to infinite hat problems” (*Mathematical Intelligencer*, 2008) and “A peculiar connection between the axiom of choice and predicting the future” (*American Mathematical Monthly*, 2008). In particular, we show that given the values of a function on an interval  $(-\infty, t)$ , the strategy produces a guess for the value of the function at  $t$  and this guess is correct except for a countable set that is nowhere dense. In this sense, if time is modeled by the real line, then the present can almost always be correctly predicted from the past.

MAA Invited Address

The Mathematics of Collective  
**Synchronization**

**Steven Strogatz**  
*Cornell University*

*Thursday, August 6*

*9:30 a.m. – 10:20 a.m.*

Every night along the tidal rivers of Malaysia, thousands of male fireflies congregate in the mangrove trees and flash on and off in silent, hypnotic unison. This display extends for miles along the river and occurs spontaneously; it does not require any leader or cue from the environment. Similar feats of synchronization occur throughout the natural world, whenever large groups of self-sustained oscillators interact. This lecture will provide an introduction to the Kuramoto model, the simplest mathematical model of collective synchronization. Its analysis has fascinated theorists for the past 35 years, and involves a beautiful interplay of ideas from nonlinear dynamics, statistical physics, and fluid mechanics. Classic results, recent breakthroughs, and open problems will be discussed, and a video of synchronous fireflies will be shown.



MAA Invited Address

**Statistics in Algebraic  
Combinatorics**

**Greg Warrington**  
*University of Vermont*

*Saturday, August 8*

*8:30 a.m. – 9:20 a.m.*

A central tension in mathematics is knowing how much to forget. Retain too many properties and the conjecture is not true. Lose too much structure and there is nothing meaningful to say. A variation of this balance is especially evident in algebraic combinatorics; oftentimes the objects of study are shadows of deep algebraic and geometric constructs.



The association of statistics (i.e., weights) to simple combinatorial objects lets us recover some of the deeper structure. For example, permutations index a class of geometric objects known as Schubert varieties. By recording the number of inversions of a permutation we obtain the dimension of the corresponding variety.

In this talk I describe some statistics on familiar combi-

natorial objects such as permutations, lattice paths and partitions. These statistics can be appreciated for the beautiful identities they satisfy and the surprising relationships among them. I will illustrate both qualities with examples. However, such statistics can also serve to illuminate the theory of symmetric functions. I will describe several situations where the underlying algebra suggests we should be able to find statistics satisfying certain properties. In a few cases such statistics have been found/invented; in other cases we are still looking.

MAA Invited Address

**Cryptography:**

**How to Keep a Secret**

**Alice Silverberg**  
*University of California  
at Irvine*

*Saturday, August 8*

*10:30 a.m. – 11:20 a.m.*

When you send your credit card number over the Internet, cryptography helps to ensure that no one can steal the number in transit. Julius Caesar and Mary Queen of Scots used cryptography to send secret messages, in the latter case with ill-fated results. More recently, cryptography is used in electronic voting, and it is also used to “sign” documents electronically. While cryptography has been used for thousands of years, public-key cryptography dates only from the 1970’s. Some recent exciting breakthroughs in public-key cryptography include elliptic curve cryptography, pairing-based cryptography, and identity-based cryptography, all of which are based on the number theory of elliptic curves. This talk will give an elementary introduction to cryptography, including elliptic curve and pairing-based cryptography.



MAA Lecture for Students

**Mathemagic with a Deck of  
Cards on the Interval Between  
5.700439718 and 806581751709438  
78571660636856403766975289505  
440883277824000000000000**

**Colm Mulcahy, Spelman College**

*Thursday, August 6*

*1:00 p.m. – 1:50 p.m.*

Some unavoidable coincidences —



as well as some truly surprising ones — will be explored as we survey 21st century mathematical creations/entertainments with a deck of cards, touching on topics in combinatorics, algebra, and probability.

### James R. Leitzel Lecture

**Joan Ferrini-Mundy, Michigan State University and the National Science Foundation**

Friday, August 7

10:30 a.m. – 11:20 a.m.

Almost two decades ago Jim Leitzel's vision for the continued improvement of mathematics education called for communication among mathematicians, educational researchers, teacher educators, and others. Collaborations among stakeholders with diverse perspectives are central to many of today's major mathematics education initiatives. What shared commitments have emerged as most promising for improving mathematics learning? What is the role of undergraduate mathematics education, mathematics education research, and the mathematical education of teachers in addressing problems of national scope and urgency? A discussion of the challenges and opportunities in the current federal policy climate for continuing to call for change in mathematics education.



### NAM David Blackwell Lecture

**Why Should I Care About Elliptic Curves?**

**Edray Goins**

**Purdue University**

Friday, August 7

1:00 p.m. – 1:50 p.m.

An elliptic curve  $E$  possessing a rational point is an arithmetic-algebraic object: It is simultaneously a nonsingular projective curve with an affine equation  $y^2 = x^3 + Ax + B$ , which allows one to perform arithmetic on its points; and a finitely generated abelian group  $E(\mathbb{Q}) \simeq E(\mathbb{Q})_{\text{tors}} \oplus \mathbb{Z}^r$ , which allows one to apply results from abstract algebra.

In this talk, we discuss some basic properties of elliptic curves, and give applications along the way.



### Pi Mu Epsilon J. Sutherland Frame Lecture

**The Mathematics of Perfect Shuffles**

**Persi Diaconis**

**Stanford University**

Friday, August 7

8:00 p.m. – 8:50 p.m.

Magicians and gamblers can shuffle cards perfectly (demonstrations provided). Understanding what can (and cannot) be done with shuffles leads to math problems, some beyond modern mathematics. The math is also useful for describing all sorts of computer algorithms.



### AWM-MAA Etta Z. Falconer Lecture

**Kate Okikiolu**

**University of California at San Diego**

Friday, August 7

8:30 a.m. – 9:20 a.m.

For the Laplacian on a closed manifold, we define a spectral invariant which is heuristically the sum of squares of the wavelengths which is a regularized trace of the inverse of the Laplacian. On a technical level, this is an analog for surfaces of the ADM mass from general relativity. We discuss a negative mass theorem for surfaces of positive genus, and give a probabilistic interpretation.



For biographical information on the speakers go to <http://www.maa.org/mathfest/ia.cfm>.

# Minicourses

## MINICOURSE #1

### **A Beginner's Guide to the Scholarship of Teaching and Learning in Mathematics**

**Jackie Dewar, Loyola Marymount University**

*Part 1: Thursday, August 6, 1:00 p.m. – 3:00 p.m.*

*Part 2: Friday, August 7, 1:00 p.m. – 3:00 p.m.*

This course will introduce people to the scholarship of teaching and learning in mathematics. We will present a framework that illustrates the similarities between disciplinary research and SoTL work, offer examples of SoTL projects in mathematics at varying stages of development, discuss methods for investigation, and help participants begin projects of their own. Participants will be guided in transforming a teaching problem of their own into a problem for scholarly investigation. Suggestions for how to make this work public will also be given.

## MINICOURSE #2

### **Effective Placement Testing for Introductory College Mathematics Courses**

**Raymond Cannon, Baylor University; Marilyn Carlson, Arizona State University; Wade Ellis, West Valley College; Bernard L. Madison, University of Arkansas; Gordon Woodward, University of Nebraska**

*Part 1: Thursday, August 6, 1:00 p.m. – 3:00 p.m.*

*Part 2: Friday, August 7, 1:00 – 3:00 pm*

This minicourse will describe and analyze ways to develop or modify placement testing programs so that they are more effective in placing students into challenging introductory courses where they can succeed. The topics will include innovations in item types and cognitive design, the increasingly complex transition testing landscape, structuring a placement program, and available testing resources. Both participants who are just beginning placement testing work and those with considerable experience are welcome.

## MINICOURSE #3

### **Preparing Students to Communicate Mathematics**

**Lew Ludwig, Denison University and Michael Orrison, Harvey Mudd College**

*Part 1: Thursday, August 6, 3:30 p.m. – 5:30 p.m.*

*Part 2: Saturday, August 8, 1:00 – 3:00 pm*

The number of oral presentations by undergraduate mathematicians at local, regional, and national meetings continues to increase. Moreover, effective oral communication is a skill highly sought by employers. In this course, participants will learn how to instruct students in effective oral communication

skills and how to evaluate their outcomes. By the end of the minicourse, participants will have developed a working model of a course with an oral communication component that they can incorporate at their institution. In addition, each person will receive a copy of an instructional DVD on effective oral communication, developed under an NSF grant, and training on how to best use these materials in their curriculum.

## MINICOURSE #4

### **Combinatorially Thinking**

**Arthur T. Benjamin, Harvey Mudd College and Jennifer J. Quinn, University of Washington, Tacoma**

*Part 1, Thursday, August 6, 3:30 p.m. – 5:30 p.m.*

*Part 2, Saturday, August 8, 1:00 p.m. – 3:00 p.m.*

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

## MINICOURSE #5

### **A Game Theory Path to Quantitative Literacy**

**David Housman, Goshen College and Rick Gillman, Valparaiso University**

*Part 1: Friday, August 7, 3:30 p.m. – 5:30 p.m.*

*Part 2: Saturday, August 8, 3:30 p.m. – 5:30 p.m.*

Game Theory, defined in the broadest sense, can be used to model many real world scenarios of decision making in situations involving conflict and cooperation. Further, mastering the basic concepts and tools of game theory require only an understanding of basic algebra, probability, and formal reasoning. These two features of Game Theory make it an ideal path to developing habits of quantitative literacy among our students. This audience participation mini-course develops some of the material used by the presenters in their general education courses

on Game Theory and encourages participants to develop their own, similar, courses.

#### MINICOURSE #6

##### Creating Demonstrations and Guided Explorations for Multivariable Calculus Using CalcPlot3D

Paul Seeburger, Monroe Community College

Part 1, Friday, August 7, 3:30 p.m. – 5:30 p.m.

Part 2, Saturday, August 8, 3:30 p.m. – 5:30 p.m.

It is often difficult for students to develop an accurate and intuitive understanding of the geometric relationships of calculus from static diagrams alone. This course will explore a collection of freely available Java applets designed to help students make these connections. Our primary focus will be on visualizing multivariable calculus using CalcPlot3D, a versatile new applet developed by the presenter through NSF-DUE-0736968. Participants will learn how to customize this applet to create demonstrations and guided exploration activities for student use. Images created in this applet can also be pasted into participant's documents. See <http://web.monroecc.edu/calcNSF/>. Some basic HTML experience is helpful.



Portland Tram. Image courtesy of [www.travelportland.com](http://www.travelportland.com).

## Short Course

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

### Two-Day Short Course Financial Mathematics

Steven Shreve, Carnegie Mellon University

Part I: Tuesday, August 4, 9:00 a.m. – 5:10 p.m.

Part II: Wednesday, August 5, 9:00 a.m. – 5:30 p.m.

Over the past 20 years, mathematical methods have permeated the finance and insurance industries. Universities have responded by offering undergraduate courses or degree programs in mathematics related to finance. This short course is based on the core of such a program at Carnegie Mellon. The purpose of this short course is to acquaint potential undergraduate instructors of financial mathematics with the main financial concepts and mathematical methodology that one can include in an undergraduate curriculum on this subject.

The first part, Introduction to Mathematical Finance, requires only that students are familiar with differential calculus. It presents calculations related to loans, annuities and bonds, no-arbitrage pricing of derivative securities, and mean-variance analysis.

The second, Discrete-Time Finance, requires students to understand probability on finite event spaces. It covers dynamic models for financial markets within that context and a derivation of the Nobel-Prize-winning Black-Scholes formula as a limit of a discrete model.

The third part, Continuous-Time Finance, expects students to know calculus-based probability and have the facility to handle analysis arguments at an undergraduate level. It introduces Brownian motion and stochastic calculus, and then derives the Black-Scholes formula within this context. We conclude with an introduction to problems in optimal consumption and investment, which provide opportunities for student projects in financial mathematics. For more information on the short course go to [www.maa.org/mathfest/minicourses.cfm](http://www.maa.org/mathfest/minicourses.cfm).

## Invited Paper Sessions

### History of Mathematics

Janet Beery, University of Redlands

Amy Shell-Gellasch, Pacific Lutheran University

Charlotte Simmons, University of Central Oklahoma

Thursday, August 6, 1:00 p.m. – 3:30 p.m.

### Mathematical and Computational Genomics

Cedric Chauve, Simon Fraser University

Thursday, August 6, 2:00 p.m. – 5:00 p.m.

### Discrete Mathematics

John Caughman, Portland State University

Thursday, August 6, 3:45 p.m. – 6:15 p.m.

### Open and Accessible Problems in Knot Theory

Laura Taalman, James Madison University

Friday, August 7, 1:00 p.m. – 3:30 p.m.

### Matroids You Have Known

Nancy Ann Neudauer, Pacific University

Friday, August 7, 2:00 p.m. – 5:00 p.m.

### Gems of Combinatorics

Ezra Brown, Virginia Tech

Arthur Benjamin, Harvey Mudd College

Friday, August 7, 3:45 p.m. – 5:45 p.m.

### Applications of Fluid Dynamics

Katherine Socha, St. Mary's College of Maryland

Saturday, August 8, 8:30 a.m. – 10:30 a.m.

### The Mathematics of Poker

Steve Bleiler, Portland State University

Saturday, August 8, 1:00 p.m. – 3:30 p.m.

### Research with Undergraduates

Mario Martelli, Claremont Graduate University

Saturday, August 8, 2:00 p.m. – 5:00 p.m.

### Graphs, Networks, and Inverse Problems

James Morrow, University of Washington

Saturday, August 8, 1:00 p.m. – 3:30 p.m.

For more information on the Invited Paper Sessions go to <http://www.maa.org/mathfest>.



**TEXAS A&M**  
UNIVERSITY

## Technology Teaching Assistants Department of Statistics

The Department of Statistics at Texas A&M University is seeking applications from qualified students for several technology teaching assistant (TTA) positions. While seeking a M.S. or Ph.D. degree in Statistics, TTAs will be actively engaged in supporting our very successful technology mediated instruction program, which includes creative uses of Technology in the classroom and the use of technology in our very successful online M.S. degree. These students will not only learn how to use the latest technologies, but will also be a part of creating and implementing new technologies for the future. As an illustration of the department's strong commitment in this area, TTAs will be supported for 12 months rather than the standard 9 months and will receive an additional 20% of support per month over the standard assistantship amount while serving in this position. It is anticipated that most students will serve as a TTA for two years with Ph.D. students eventually moving on to be supported by funds focused on their research program.

#### Qualifications Include:

- Admission to the Statistics graduate program
- A strong interest in teaching with technology
- Computing experience with hardware & software experience preferred
- Self motivated team player willing to take responsibility
- Excellent written and oral communication skills

#### Duties Include:

- Setup computer, microphones, Wacom tablet, Centra Session
- Record & produce the class
- Upload "video" to Dostat
- Work on problems in Webassign
- Grading the summer term
- Setup & produce the evening Q&A

Send resume, transcript and three letters of recommendation to: Dr. Michael Speed, Department of Statistics, Texas A&M University, 3143 TAMU, College Station, TX 77843-3143. Please visit our website and apply online at [http://dl.stat.tamu.edu/tta/tta\\_app.php](http://dl.stat.tamu.edu/tta/tta_app.php). Also, stop by our booth at MathFest 2009 for information on our Online Master's and Certificates program as well as our Online AP Statistics workshop. EO/AA employer.

## Contributed Paper Sessions

### Advances in Recreational Mathematics

*Paul R. Coe, Dominican University*

*Kristen Schemmerhorn, Dominican University*

*Thursday, August 6*

### Current Research in Mathematics Education for In-service Teachers

*Nancy Leveille, University of Houston-Downtown*

*Carol Vobach, University of Houston-Downtown*

*Thursday, August 6*

### Effective Use of Dynamic Mathematical Software in the Classroom

*Murphy Waggoner, Simpson College*

*Thursday, August 6*

### Resources for Teaching Math and the Arts

*Douglas Norton, Villanova University*

*Thursday, August 6*

### Effective Ways to Teach Upper Level Mathematics Courses for Secondary Mathematics Education Majors

*Joyati Debnath, Winona State University*

*Friday, August 7*

### Fascinating Examples from Combinatorics, Number Theory, and Discrete Mathematics

*Pallavi Jayawant, Bates College*

*Todd Cadwallader Olsker, California State University,*

*Fullerton*

*Friday, August 7*

### The History and Philosophy of Mathematics, and Their Uses in the Classroom

*Bonnie Gold, Monmouth University*

*Amy Shell-Gellasch, Pacific Lutheran University*

*Janet Beery, University of Redlands*

*Charlotte Simmons, University of Central Oklahoma*

*Friday, August 7*

### Teaching Numerical Methods

*Kyle Riley, South Dakota School of Mines*

*& Technology*

*Friday, August 7*

### Active and Innovative Learning Approaches for Pre-service Mathematics Teachers at the K-12 and University Levels

*Elizabeth Burroughs, Montana State University*

*Cheryl Beaver, Western Oregon University*

*Laurie Burton, Western Oregon University*

*Jessica Deshler, West Virginia University*

*Klay Kruczek, Western Oregon University*

*Friday, August 7*

### Biomathematics in the Undergraduate Curriculum

*Timothy D. Comar, Benedictine University*

*Saturday, August 8*

### Getting Students Involved in Writing Proofs

*Rachel Schwell, Central Connecticut State University*

*Jennifer M. Franko, The University of Scranton*

*Aliza Steurer, Dominican University*

*Saturday, August 8*

### Graph Theory and Applications

*Raluca Gera, Naval Postgraduate School*

*Saturday, August 8*

### General Contributed Paper Sessions

*Sarah Mabrouk, Framingham State College*

*Thursday, Friday, and Saturday mornings and afternoons*

For more information on the Contributed Paper Sessions go to <http://www.maa.org/mathfest>.

## Call For Student Papers

The deadline for receipt of applications for student papers is Friday, June 12, 2009.

Students may not apply for funding from both MAA and Pi Mu Epsilon. Every student paper session room will be equipped with a standard overhead projector, a computer projector (presenters must provide their own laptops or have access to one), and a screen. Each student talk is 15 minutes in length.

### MAA Sessions

Students who wish to present at the MAA Student Paper Sessions at MathFest 2009 in Portland, Oregon, must be sponsored by a faculty advisor familiar with the work to be presented. Some funding to cover costs (up to \$600) for student presenters is available. At most one student from each institution or REU can receive full funding; additional such students may

be funded at a lower rate. All presenters are expected to take full part in the meeting and attend indicated activities sponsored for students on all three days of the conference. Nomination forms and more detailed information for the MAA Student Paper Sessions is available at [www.maa.org/students/undergrad/](http://www.maa.org/students/undergrad/).

### Pi Mu Epsilon Sessions

Pi Mu Epsilon student speakers must be nominated by their chapter advisors. Application forms for PME student speakers are available on the PME web site [www.pme-math.org](http://www.pme-math.org) or can be obtained from PME Secretary-Treasurer, Dr. Leo Schneider <[leo@jcu.edu](mailto:leo@jcu.edu)>. A PME student speaker who attends all the Pi Mu Epsilon activities is eligible for transportation reimbursement up to \$600, and up to five speakers per Chapter may be eligible for full or partial reimbursement.

## Graduate Student Activities

### GRADUATE STUDENT POSTER SESSION

James Freeman, Cornell College

Thursday August 6, 3:30 p.m. – 5:00 p.m.

### GRADUATE STUDENT RECEPTION

David Manderscheid, University of Nebraska-Lincoln

James Freeman, Cornell College

Thursday, August 6, 5:00 p.m. – 6:00 p.m.

### GRADUATE STUDENT WORKSHOP

What's the Story? A Graduate Student Workshop on Formulating an Effective Mathematical Presentation

Rachel Schwell, Central Connecticut State University

Aaron Luttmann, Clarkson University

Friday, August 7, 2:00 p.m. – 3:30 p.m.

### HOW TO APPLY FOR JOBS

David Manderscheid, University of Nebraska-Lincoln

Friday, August 7, 4:00 p.m. – 5:20 p.m.

### EXPOSITORY TALKS FOR UNDERGRADUATES BY GRADUATE STUDENTS

Jim Freeman, Cornell College

Saturday, August 8, 1:00 p.m. – 5:30 p.m.

For more information on the Graduate Student Activities go to <http://www.maa.org/mathfest>.

## Panels and Other Sessions

### Family Matters

Georgia Benkart, University of Wisconsin-Madison

Maura Mast, University of Massachusetts-Boston

Maeve Lewis McCarthy, AWM & Murray State University

*Thursday, August 6, 1:00 p.m. – 2:20 p.m.*

### Workshop on Teaching Abstract Algebra for Understanding

Sean Larsen, Portland State University

Keith Weber, Rutgers University

*Part I: Thursday, August 6, 1:00 p.m. – 2:20 p.m.*

*Part II: Friday, August 7, 1:00 p.m. – 2:20 p.m.*

### So You Want To Use An Online Homework System

Jason Aubrey, University of Missouri

Michael B. Scott, California State University,

Monterrey Bay and Charles Weaver, University of Phoenix and Washtenaw Community College

*Thursday, August 6, 2:30 p.m. – 3:50 p.m.*

### MAA Section Officers Meeting

Richard A. Gillman, Valparaiso University

*Thursday, August 6, 2:30 p.m. – 5:00 p.m.*

### Intensive Individual Experiences in the Math Major

Carol Schumacher, Kenyon College

Michael Pearson, MAA

*Thursday, August 6, 4:00 p.m. – 5:20 p.m.*

### Issues for Early Career Mathematicians in Academia

Michael Dorff, Brigham Young University and David Stone, Georgia Southern University

*Thursday, August 6, 5:00 p.m. – 7:00 p.m.*

### Mathematics Illuminated

Susan Wildstrom, Walt Whitman High School

*Thursday, August 6, 5:15 p.m. – 6:30 p.m.*

### Count: A Reading of a Play by John Martin

*Thursday, August 6, 8:00 p.m. – 9:30 p.m.*

### Poster Session: First Day of Class Activities

Cinnamon Hillyard, Chair of SIGMAA QL

Dan Lotesto, Chair of SIGMAA TAHSM

*Friday, August 7, 10:30 a.m. – noon*

### MAA Prize Session

Martha J. Siegel, Towson University, MAA Secretary

*Friday, August 7, 11:30 a.m. – Noon*

### Alder Award Session

David Bressoud, Macalester College, MAA President

*Friday, August 7, 2:00 p.m. – 3:20 p.m.*

### Assessing the Effectiveness of Online Homework

Michael Gage, Arnold Pizer, Vicki Roth,

University of Rochester

*Friday, August 7, 2:30 p.m. – 3:50 p.m.*

### Poster Session: Research by Early Career Mathematicians

Michael Dorff, Brigham Young University and

David Stone, Georgia Southern University

*Friday, August 7, 3:00 p.m. – 5:00 p.m.*

### How to Apply for Jobs

David Manderscheid, University of Nebraska-Lincoln

*Friday, August 7, 4:00 p.m. – 5:20 p.m.*

### Mathematics Outreach Programs for Pre-college Students

Robert Rogers, State University of New York

at Fredonia and James A. Sellers, Pennsylvania State University

*Friday, August 7, 4:00 p.m. – 5:20 p.m.*

### Issues of Common Concern between MAA and NCTM

Gail Burrill, Michigan State University

*Saturday, August 8, 1:00 p.m. – 2:20 p.m.*

### MAA's New Online Calculus Text

Don Albers, MAA

*Saturday, August 8, 1:00 p.m. – 3:00 p.m.*

### SIGMAA on Math Circles for Students and Teachers

Tatiana Shubin, San Jose State University

James Tanton, St. Mark's School

*Saturday, August 8, 1:00 p.m. – 5:00 p.m.*

### Assessment of Learning in College Algebra or Pre-Calculus Courses

Bonnie Gold, Monmouth University

Barbara Jur, Macomb Community College

*Saturday, August 8, 2:30 p.m. – 3:50 p.m.*

### SUMMA Session on MAA Summer Research Programs

William Hawkins, MAA and the University of the

District of Columbia and Robert Megginson, University of Michigan

*Saturday, August 8, 4:00 p.m. – 5:20 p.m.*

## Undergraduate Student Sessions

### MAA-PME STUDENT RECEPTION

*Wednesday, August 5, 4:30 p.m. – 5:30 p.m.*

### MATH JEOPARDY

**Robert Vallin, Slippery Rock University of Pennsylvania**

**Michael Berry, University of Tennessee**

*Wednesday, August 5, 5:30 p.m. – 6:45 p.m.*

### STUDENT HOSPITALITY CENTER

**Richard and Araceli Neal**

**American Society for the Communication of Mathematics**

*Thursday, August 6, 9:00 a.m. – 5:00 p.m.*

*Friday, August 7, 9:00 a.m. – 5:00 p.m.*

*Saturday, August 8, 9:00 a.m. – 1:00 p.m.*

### MAA LECTURE FOR STUDENTS

**Mathemagic with a Deck of Cards on the Interval Between 5.700439718 and 80658175170943878571660636856403766975289505440883277824000000000000**

**Colm Mulcahy, Spelman College**

*Thursday, August 6, 1:00 p.m. – 1:50 p.m.*

### MAA UNDERGRADUATE STUDENT ACTIVITY

**Chop-chop! A Look at Dissection Puzzles**

**Travis Kowalski, South Dakota School of Mines and Technology**

*Friday, August 7, 1:00 p.m. – 1:50 p.m.*

### MAA UNDERGRADUATE STUDENT ACTIVITY

**Secrets of Mental Math**

**Arthur Benjamin, Harvey Mudd College**

*Friday, August 7, 1:00 p.m. – 1:50 p.m.*

### MAA STUDENT PAPER SESSIONS

**J. Lyn Miller, Slippery Rock University**

**John Hamman, Montgomery College**

**Daluss Siewert, Black Hills State University**

*Thursday, August 6, 8:30 a.m. – 10:30 a.m. and 2:00 p.m. – 6:15 p.m.*

*Friday, August 7, 8:30 a.m. – 10:30 a.m. and 2:00 p.m. – 5:00 p.m.*

### PI MU EPSILON STUDENT PAPER SESSIONS

**Angela Spalsbury, Youngstown State University**

*Thursday, August 6, 2:00 p.m. – 6:15 p.m.*

*Friday, August 7, 8:30 a.m. – 10:30 a.m. and 2:00 p.m. – 5:00 p.m.*

### PI MU EPSILON STUDENT BANQUET AND AWARDS CEREMONY

*Friday, August 7, 6:00 p.m. – 7:45 p.m.*

### PI MU EPSILON J. SUTHERLAND FRAME LECTURE

**The Mathematics of Perfect Shuffles**

**Persi Diaconis, Stanford University**

*Friday, August 7, 8:00 p.m. – 8:50 p.m.*

### MAA ICE CREAM SOCIAL

*Friday, August 7, 9:00 p.m. – 10:00 p.m.*

### MAA MATHEMATICAL CONTEST IN MODELING (MCM) WINNERS

**Ben Fusaro, Florida State University**

*Saturday, August 8, 9:00 a.m. – 10:30 a.m.*

### STUDENT PROBLEM SOLVING COMPETITION

**Richard Neal, American Society for the Communication of Mathematics**

*Saturday, August 8, 1:00 p.m. – 2:15 p.m.*

### SPECIAL SESSION

**Expository Talks for Undergraduates by Graduate Students**

**Jim Freeman, Cornell College**

*Saturday, August 8, 1:00 p.m. – 5:30 p.m.*

For more information on Undergraduate Student Sessions go to <http://www.maa.org/mathfest>.

## MathFest 2009

# grand opening reception

Grand Opening Reception  
Wednesday, August 5, 5:30 pm to 7:00 pm

Kick-off MathFest 2009 at the Grand Opening Reception in the Exhibit Hall at the Marriott Portland Downtown Waterfront. This event will take place just before the Opening Banquet and will be a great way to catch-up with colleagues in a casual setting.

Cash Bar and Light Snacks will be available



Mathematical Association of America

## SOCIAL ACTIVITIES

### PORTLAND GARDEN TOUR

*Wednesday, August 5*

**9:00 a.m. – 4:00 p.m.**

Explore Portland, visit the Classical Chinese, Rose and Japanese Gardens, and shop and enjoy lunch in Nob Hill on the Garden Tour.

Visit the Classical Chinese Garden, the largest Suzhou-style garden outside of China. and enjoy a guided tour of this unique 40,000 square foot walled garden. Travel above the city into Washington Park to the International Rose Test Garden. Established in 1917, the Garden is recognized as the oldest public rose test garden in the United States. Then visit the beautiful Japanese Gardens, considered one of the most authentic outside of Japan. Discover the tranquil beauty of the Strolling Pond, Tea, Natural, Sand and Stone, and Flat Gardens influenced by Shinto, Buddhist and Taoist philosophies emphasizing plants, stones and water - the essence of nature with a docent from the garden. Enjoy lunch on your own and shopping on "Trendy 23rd," also known as Nob Hill. Cost of the tour is \$49 per person. The tour will depart at 9:00 a.m. from the Portland Marriott Downtown Waterfront and return at 4:00 p.m.



### MATH JEOPARDY

*Wednesday, August 5*

**5:30 p.m. – 6:45 p.m.**

**Answer:** A fun undergraduate mathematics contest to lead off MathFest.

**Question:** What is Math Jeopardy? Four teams of students will provide the questions to go with the mathematical answers in many categories. Come cheer for your favorite team. The session will be emceed by Michael Berry.



### OPENING RECEPTION

*Wednesday, August 5, 6:30 p.m. – 7:30 p.m.*

The Association is pleased to hold a reception with a cash bar for all MathFest participants immediately preceding the Opening Banquet.

### OPENING BANQUET

*Wednesday, August 5, 7:30 p.m. – 9:00 p.m.*

Continue the exciting evening by joining new and long-time friends and colleagues for a fine dinner. There will be an after dinner presentation by Ed Sandifer, Western Connecticut State University and editor of the MAA online column "How Euler Did It," who will present the talk "Prove it again, Sam."

Serving as mistress of ceremonies will be Nancy Neudauer from Pacific University. Tickets are \$50 per person. Purchasing tickets through advanced registration is recommended, since only a limited number of tickets will be available for sale on site. Choice of entrees available.

### 2ND ANNUAL MATHFEST 5K FUN RUN/WALK

*Saturday, August 8, 6:30 a.m.*

Get active with your colleagues and have some fun Saturday, August 8 at the Tom McCall Waterfront Park! More than 150 MathFest attendees participated in the 2008 Inaugural MathFest 5K Fun Run/Walk and this year is sure to be a hit. The fee is \$15 and all participants will receive a t-shirt\* and a water bottle. A portion of the proceeds will be donated to JOIN: Connecting the Streets to a Home!



Visit the MathFest website [www.maa.org/mathfest](http://www.maa.org/mathfest) for more information, to register and complete the required participation waiver or to make a donation.

\*T-shirts must be picked up at the registration desk prior to Saturday, August 8, 2009.\*

**Thank you to our 2009 5K Sponsors: Texas A&M and Brooks/Cole Cengage Learning**

### MAA SILVER AND GOLD BANQUET

*Saturday, August 8, 6:00 p.m. – 9:00 p.m.*

Our annual end-of-meeting banquet is a time to honor MAA dignitaries and have a very special conclusion to the meeting. Please join us in the Oregon Ballroom for this ticketed event. Robert Osserman, Professor Emeritus from Stanford University is the invited speaker. His talk will be "The Shape of the Gateway Arch: A Mathematical Detective Story." Afton Cayford, University of

British Columbia will be the emcee. Cash bar. Purchasing tickets through advanced registration is recommended, since only a limited number of tickets will be available for sale on site.

**MT. HOOD TIMBERLINE LODGE ADVENTURE**

*Sunday, August 9, 9:00 a.m.–4:00 p.m.*

Scale majestic, snow-capped Mt. Hood in a luxury motor coach and partake in the splendor. Your tour guide will share the area's history, and ecology as you travel through several small Oregon



towns, into the Mt. Hood National Forest, as we ascend to the 6,000 foot level of Mt. Hood, and what is considered the grandest example of Cascadian architecture, Timberline Lodge. The Lodge is the grandest example of Cascadian architecture. Inside and out the Lodge is handmade, from its hand-hewn beams to its hand-woven draperies and is inspired by pioneer, Indian and wildlife themes. Timberline is also a year-round ski area and summer home of the U.S.

Ski Team. At the Lodge, we'll join the U.S. Forest Service for a film and tour and lunch at Timberline. You'll also have time to explore on your own, visit the gift shop and take a short walk. Cost of the tour is \$59 per person. The tour will depart at 9:00 a.m. from the Portland Marriott Downtown Waterfront and return at 4:00 p.m.

**COLUMBIA RIVER GORGE & WINE TASTING ADVENTURE**

*Sunday, August 9, 9:00 a.m.– 4:00 p.m.*

Experience the grandeur of the Columbia River Gorge, and discover the ecology and history of one of the world's most magnificent landscapes as we travel along the Old Columbia River Gorge Highway. Visit Multnomah Falls, which plummets 620 feet, making it the second highest year-round waterfall in the United States. From Multnomah Falls we continue along the Columbia River to the town of Hood River and Cathedral Ridge Winery. Taste award winning wines and enjoy a prepared box lunch. Following lunch we'll travel back to Portland stopping at Bonneville Dam, one of the first of eight federal locks and dams on the Columbia and Snake Rivers. Cost of the tour is \$70 per person.

**Visit the Exhibit Hall in Portland**

**LOCATION:**

**Portland Marriott Downtown Waterfront  
Lower Level 2**

**Hours:**

<b>Wednesday, August 5:</b>	<b>5:30 p.m.–7:00 p.m.</b>	<b>Grand Opening Reception (New)</b>
		<b>Dedicated Time</b>
Thursday, August 6:	9:00 a.m.–5:00 p.m.	Show Hours
Friday, August 7:	9:00 a.m.–5:00 p.m.	Show Hours
Saturday, August 8:	9:00 a.m.–2:00 p.m.	Show Hours

**Scavenger Hunt**

Don't miss out on the MathFest Scavenger Hunt. Stop by exhibitor booths to get information that will help you to fill out the Scavenger Hunt form found in your registration packet. Return it with the correct answers, and you become eligible to win some really great prizes. The drawings will be held in the Exhibit Hall. Check your MathFest Program for details. Who knows? You could end up a winner!



## General Information

### REGISTRATION

Onsite registration will be located in the Registration Foyer of the Portland Marriott Downtown Waterfront. It will be open Wednesday, August 5, from 8:00 am to 7:00 pm, Thursday, August 6, and Friday, August 7, from 8:00 am to 4:00 pm, and Saturday, August 8 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.

	Early by 5/15	Regular 5/16 thru 6/15	Late after 6/16
Member	\$225	\$240	\$315
Non-member	\$315	\$365	\$440
Grad Student	\$50	\$50	\$55
Undergraduate Student	\$50	\$50	\$55
Unemployed	\$50	\$60	\$75
Individual from a			
Developing Country	\$50	\$60	\$75
K-12 Teacher	\$50	\$60	\$75
Emeritus Member	\$50	\$60	\$75
One-Day (Fri, Sat, Sun)	\$100	\$110	\$125
High School Student	\$25	\$25	\$25
Guest	\$25	\$25	\$25
Minicourses	\$75	\$75	\$90
Short Course			
MAA and AMS Member and Mathfest Participant	\$150	\$150	\$150
Non-member or Short Course Only	\$200	\$200	\$200
Students	\$75	\$75	\$75

**All Name Badge/Registration packets can be picked up at the registration desk starting at 8:00 am on Wednesday, August 5, 2009.**

### EARLY BIRD REGISTRATION:

As a repeat from last year, we are bringing back the early bird registration; through May 15 you can register at last year's prices!

### REGULAR REGISTRATION:

Registrations received between May 16 and June 15 will be processed at the regular registration rate.

### LATE REGISTRATION:

Registrations received after June 16 will be processed at the late registration rate.

### MATHFEST CANCELLATIONS:

MathFest cancellations must be received by June 13 to qualify for a complete refund. Cancellations made after June 13 but before July 28 are eligible for a 50 percent refund. If your registra-

tion packet was mailed before your cancellation, you must return your badge to MAA/MathFest, 1529 18<sup>th</sup> Street, NW, Washington, DC 20036 to receive your refund.

### MINICOURSE/SHORT COURSE REGISTRATION:

Enroll early! Space is limited. If a course is full, you will be notified. On-site registration is allowed if space allows. The MAA reserves the right to cancel courses due to low enrollment. Full refunds will be issued for cancelled courses. Otherwise, minicourse and/or short course cancellations must be received by July 28 to be eligible for a 50% refund.

### MATHFEST HOUSING:

The headquarters hotel for MathFest is the Portland Marriott Downtown Waterfront at 1401 SW Naito Parkway. Rooms may also be reserved at the Hilton Portland & Executive Towers. The MAA has guaranteed sleeping rooms at each location. Please book your hotel reservation through the MAA to receive the meeting discount. Thank you!

### PARKING INFORMATION:

Valet parking is available at the Portland Marriott Downtown Waterfront for \$8 per hour or \$28 per day. For offsite parking please contact the hotel for details.

### TRAVEL INFORMATION:

**By Plane:** Northwest Airlines is the official airline for MathFest 2009. To obtain the discounted fare make your reservations by calling 1-800-328-1111. Please be sure to refer to **promo code NM3KJ** when making your reservations.

### Terms and Conditions

- 10% discount for tickets purchased at least 60 days in advance of travel
- 6% discount for tickets purchased within 60 days
- Valid for travel July 22-August 8, 2008 for travel to Portland from any destination served by Northwest Airlines.

**By Train:** Portland Union Station (800 NW 6th Avenue) is served by three scheduled Amtrak intercity passenger trains: Amtrak Cascades, Amtrak Coast Starlight, and Empire Builder. Please contact Amtrak for specific schedule information at 1.800.USA.RAIL or [www.amtrak.com](http://www.amtrak.com).

**By Car:** Portland is located in the northwest corner of Oregon and is accessible via several major highways. Portland is a: 1 ½ hour drive from Eugene, OR (via Interstate 5); 2 ½ hour drive from Seattle, WA (via Interstate 5); 5 ½ hour drive from Spokane, WA (via Interstate 84); 9 ½ hour drive from Sacramento, CA (via Interstate 5).

# MathFest 2009

August 6-8  
Portland, Oregon



## Advanced Registration Form

Name \_\_\_\_\_

Mailing Address \_\_\_\_\_  
\_\_\_\_\_

Telephone \_\_\_\_\_ Fax \_\_\_\_\_

Email Address \_\_\_\_\_

### Deadlines:

Early Bird Registration: Register online at [www.maa.org/mathfest](http://www.maa.org/mathfest) or with this form on or before May 15, 2009 and receive a discounted registration rate!

Regular Registration: Register on or before June 15, 2009 and receive this year's rates.

### Cancellations:

To receive a full refund, we must receive your cancellation by June 15. A 50% refund is available thru July 28, 2009.

### Badge Information

Name to appear on badge: \_\_\_\_\_  
(First and Last Name)

Affiliation for badge: \_\_\_\_\_

Name for Guest badge: \_\_\_\_\_

This is my primary mailing address for all MAA Membership Items?

Yes  No

Please provide MAA Member number, if applicable:  
\_\_\_\_\_

I am a first time attendee?  Yes  No

All Registration Packets can be picked up at the Registration Desk starting at 8:00 am, Wednesday, August 5, 2009.

I prefer acknowledgement of this registration sent by U.S. mail, not e-mail.

### Registration and Event Fees

Registration Category	Early by 5/15	Regular - 5/16 through 6/15	Late after 6/15
Member	\$225	\$240	\$315
Non-member	\$315	\$365	\$440
Graduate Student	\$50	\$50	\$55
Undergraduate Student	\$50	\$50	\$55
PME Undergraduate Student			
*Includes PME Banq Tick	\$75	\$75	\$80
Unemployed	\$50	\$60	\$75
Individual from a Developing Country	\$50	\$60	\$75
K - 12 Teacher	\$50	\$60	\$75
Emeritus Member	\$50	\$60	\$75
One Day (Fri., Sat., Sun.)	\$100	\$110	\$125
High School Student	\$25	\$25	\$25
Guest	\$25	\$25	\$25
<b>Minicourses</b>	\$75	\$75	\$90
<b>Short Course</b>			
MAA and AMS member and MathFest Participant	\$150	\$150	\$150
Non-Member or Short Course Only	\$200	\$200	\$200
Students	\$75	\$75	\$75

### Computations

- Basic Registration: Category # \_\_\_\_\_ @ \$ \_\_\_\_\_ ea = \$ \_\_\_\_\_.
- Add Short Course: (held 8/4 and 5) MathFest registration is not required to attend short course.  Yes  No = \$ \_\_\_\_\_.
- Add Minicourse(s): You may sign up for a maximum of two Minicourses. MathFest Registration is Required. Enroll me in # \_\_\_\_\_ and # \_\_\_\_\_. My alternatives are # \_\_\_\_\_ and/or # \_\_\_\_\_.
- Add Special Events: From subtotal \$ \_\_\_\_\_

TOTAL FEES

\$ \_\_\_\_\_

Mail or Fax this form to:  
MathFest  
c/o The Mathematical Association of America  
1529 18th Street, NW  
Washington, DC 20036  
FAX: 202.387.0162  
Phone: 1.800.741.9415 ext. 430

Special Event	#Tix	Price	Total
Opening Banquet (8/5)	_____	\$50 ea	\$ _____
<input type="checkbox"/> Beef <input type="checkbox"/> Chicken <input type="checkbox"/> Fish <input type="checkbox"/> Vegetarian			
PME Student Banquet (8/7)			
Undergrad students & Student paper presenters	_____	\$25 ea	\$ _____
All Others	_____	\$50 ea	\$ _____
<input type="checkbox"/> Chicken <input type="checkbox"/> Ribs <input type="checkbox"/> Vegetarian			
Silver & Gold Banquet (8/8)			\$ _____
__ Beef (\$60) __ Fish (\$60) __ Chicken (\$50) __ Vegetarian (\$50)			
Portland Garden Tour (8/5)	_____	\$49 ea	\$ _____
Mt. Hood Timberlaine			
Lodge Adventure (8/9)	_____	\$59 ea	\$ _____
Columbia River Gorge & Wine Tasting Adventure (8/9)	_____	\$70 ea	\$ _____
5K Fun Run/Walk	_____	\$15/reg.	\$ _____
T-Shirt Sizes (S), (M), (L), and (XL)			
Donation			\$ _____
Subtotal for Special Events:			\$ _____
<b>Student/Other Events: (non-ticketed)</b>			
Graduate Student Reception (8/5)			<input type="checkbox"/> Yes <input type="checkbox"/> No
Student Activity Session A (8/6)			<input type="checkbox"/> Yes <input type="checkbox"/> No
Student Activity Session B (8/7)			<input type="checkbox"/> Yes <input type="checkbox"/> No
Graduate Student Workshop (8/7)			<input type="checkbox"/> Yes <input type="checkbox"/> No
Math Jeopardy (8/5)			<input type="checkbox"/> Yes <input type="checkbox"/> No

### Payment Information:

Check. Check Number: \_\_\_\_\_  
Make checks payable to the MAA. Checks must be drawn on a U.S. Bank in U.S. dollars.

Charge my:  VISA  MasterCard # \_\_\_\_\_  
Exp: \_\_\_\_\_

Signature: \_\_\_\_\_

Name printed on Card: \_\_\_\_\_

Billing zip code: \_\_\_\_\_  
(Please note that a \$15 processing fee will be applied for each returned check or invalid credit card.)

Purchase Order # \_\_\_\_\_ Please enclose copy.

Register online  
at [www.maa.org/mathfest](http://www.maa.org/mathfest)

# MathFest 2009

August 6-8  
Portland, Oregon



## Housing Registration Form

Name \_\_\_\_\_

Email Address \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_

Mail or Fax this form to: MathFest  
c/o The Mathematical Association of America  
1529 18th Street, NW  
Washington, DC 20036  
FAX: 202.387.0162 1.800.741.9415 ext. 430

## Hotel Choices

### Portland Marriott Downtown Waterfront MathFest 2009 Headquarters Hotel

1401 SW Naito Parkway  
Portland, Oregon 97201  
Tel: (503) 226-7600  
<http://www.marriott.com/hotels/travel/pdxor-portland-marriott-downtown-waterfront/>

The Portland Marriott Downtown Waterfront Hotel is best known for its award winning service. The hotel recently underwent a \$8.5 million guest room improvement project. Updates include 32" LCD TVs, modern bathroom decor, local art work, and wireless internet. Outside of their rooms, guests will enjoy our indoor pool, whirlpool, on-site fitness center, and nearby golf and spas.

#### Standard Room Rate:

\$137.25 (includes a 12.5% sales and occupancy tax) Single or Double Occupancy: Features one king bed or two doubles. Alarm clock; hair dryer; coffee maker; luxurious bedding; 32" LCD TV; and wireless internet.

### Hilton Portland & Executive Towers

Located Seven Blocks from Portland Marriott Downtown Waterfront  
921 SW Sixth Avenue  
Portland, Oregon 97204  
Tel: (503) 226-1611  
[www.portland.hilton.com](http://www.portland.hilton.com)

The Hilton Portland & Executive Tower hotel, the largest hotel in the state, consists of two separate buildings and combined offers 782 guest rooms. It is the largest Green Seal Certified hotel on the West Coast.

#### Standard Room Rate:

\$130.50 (includes a 12.5% sales and occupancy tax). Single or Double Occupancy: Features one king bed or two doubles. High speed internet (fee); Hilton Serenity bed; large work desk; coffeemaker; clock radio; and views of the city, mountains or the river.

**Basic Information: MathFest attendees are guaranteed the above meeting discounts if you reserve your room through MathFest by June 28 either online or via this reservation form.** Meeting registration and ticket fees are paid separately from housing. Your registration fee will be processed immediately and your housing fee will be processed on or about July 7. Quoted rates include 12.5% sales and occupancy tax. All hotels offer indoor swimming pools and fitness centers. Indoor and Outdoor Parking is available for an extra fee.

#### Reservation

Please reserve me \_\_\_\_\_ #of nights at \_\_\_\_\_ Hotel in a \_\_\_\_\_ room type at \$\_\_\_\_\_/night.

I will arrive \_\_\_\_\_ date and depart \_\_\_\_\_ date. I will be sharing a room with: \_\_\_\_\_.

**For questions or changes please contact the meetings department at 1-800-741-9415 x430.**

#### Payment Information:

Check Check Number: \_\_\_\_\_

Make checks payable to the hotel. Checks must be drawn on a U.S. Bank in U.S. dollars.

Charge my:  VISA  MasterCard # \_\_\_\_\_

Exp: \_\_\_\_\_

Signature: \_\_\_\_\_

Name printed on Card: \_\_\_\_\_

Billing zip code: \_\_\_\_\_

(Please note that a \$15 processing fee will be applied for each returned check or invalid credit card.)

Purchase Order # \_\_\_\_\_ Please enclose copy.

Register online at [www.maa.org/mathfest](http://www.maa.org/mathfest)

## Attractions

(details on reverse)

- 1 Powell's City of Books
- 2 Powell's Technical Books
- 3 Garding Theater
- 4 Tanner Springs Park
- 5 Jamison Square
- 6 Museum of Contemporary Craft
- 7 Chinatown Gate
- 8 Classical Chinese Garden
- 9 Saturday Market
- 10 Chapman & Lownsdale Squares
- 11 Portland Building & Portlandia
- 12 Pioneer Courthouse Square
- 13 Mill Ends Park
- 14 Center for the Performing Arts
- 15 Oregon History Center
- 16 Northwest Film Center
- 17 Portland Art Museum
- 18 19 20 Portland Farmers Markets(s)
- 21 Da Tung Elephant Sculpture
- 22 Gov. Tom McCall Waterfront Park
- 23 Salmon Street Springs
- 24 Japanese-American Historical Plaza
- 25 Keller Fountain Park
- 26 OMSI

## Hotels

(downtown & lloyd center)

- 1 Hotel deLuxe
- 2 Mark Spencer
- 3 Ace
- 4 Governor
- 5 Westin
- 6 Benson
- 7 Hotel Lucia
- 8 Vintage Plaza
- 9 Marriott City Center
- 10 Hotel Monaco
- 11 The Nines
- 12 Embassy Suites
- 13 Hotel Fifty
- 14 Hilton
- 15 Heathman
- 16 Paramount
- 17 Hotel Modera
- 18 Marriott Waterfront
- 19 Riverplace
- 20 Residence Inn Riverplace
- 21 Crowne Plaza
- 22 Shilo Inn
- 23 Courtyard Marriott
- 24 La Quinta
- 25 Red Lion
- 26 Inn at the Convention Ctr.
- 27 Shilo Inn



**Downtown PORTLAND**

MAP COURTESY OF POWELL'S CITY OF BOOKS / 1000 W BURNSIDE / 800.878.7223 / POWELLS.COM

WELCOME TO PORTLAND  
 Powell's Books  
 800.878.7223 / POWELLS.COM