



**MAA**

MATHEMATICAL ASSOCIATION OF AMERICA



# **MAA Math Fest** 2012

MADISON, WISCONSIN | AUGUST 2-4



Solve the differential equation.


$$t \ln t \frac{dr}{dt} + r = 7te^t$$

$$r = \frac{7e^t + C}{\ln t}$$



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## TABLE OF CONTENTS



Welcome to MathFest in Madison. Drawing on the planning, skills, and cooperation of countless MAA staff, committees, councils, and members, the 2012 MathFest has much to offer everyone. You can trust MathFest's signature combination of mathematical interest and expository excellence.

MAA members strongly supported the last two MathFests, in Pittsburgh (2010) and Lexington (2011). By attending this election-year version, in Madison, you've voted with your feet for yet another slate of attractive mathematical options.

Each year's Hedrick Lectures enjoy a marquee spot on the ticket. Last year Manjul Bhargava, speaking on the The World of Algebraic Curves, attracted a simple majority of Fest-goers – a winner by any voting method. This year's series, on Algebraic Geometry: Tropical, Convex, and Applied, by Bernd Sturmfels, looks likely to repeat that feat.

The Madison MathFest slate is strong, varied, and deep. Invited addresses span a remarkable range of topics: chaos and stability; mentoring; mathematical habits of mind; practical applications of topology; prime numbers in and beyond their natural habitat; disease dynamics; pure and applied mathematics in synergy; and much more. Combine all this with six minicourses, paper sessions, panels, poster sessions, workshops, SIGMAA activities, student-focused sessions, prizes and awards, the MAA banquet (with musical entertainment!), and other social events and you've got a problem: fitting too many attractive pigeons into too few holes. But we're mathematicians; we like such challenges.

Late summer is the right time. With academic hiring done and fall classes still safely in the future, we're free to do and learn about mathematics in all its depth and breadth, to meet old mathematical friends, and to make new ones. MathFest is truly about MAA's core values: participation, investigation, and education. I hope you'll enjoy all three here in Madison.

Paul Zorn  
MAA President

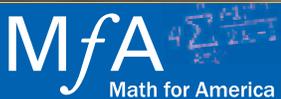
- 3** Invited Addresses
- 7** Invited Paper Sessions
- 8** Contributed Paper Sessions
- 9** SIGMAA Activities
- 10** Undergraduate Student Sessions
- 11** Graduate Student Activities
- 12** Panel Sessions
- 13** Workshop and Other Sessions
- 14** Minicourses
- 16** Alder Awards
- 17** Exhibitors
- 22** Map of Madison
- 24** Timetable
- 45** Community Presentations
- 46** Social Events
- 47** SUDOKU



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you want your students to  
love it, too.**

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- **The MfA School Leader Fellowship:**  
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## FELLOWSHIP PROGRAMS

**MfA’s fellowship programs enable mathematics teachers and school leaders to exchange innovations in mathematics instruction, while also engaging in a larger, shared mission.**

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Visit us at booth  
**#4**



### EARLE RAYMOND HEDRICK LECTURE SERIES

**Bernd Sturmfels**, University of California, Berkeley

#### **Algebraic Geometry: Tropical, Convex, and Applied**

##### **Lecture 1:**

Thursday, August 2, 10:30 a.m. – 11:20 a.m., Ballroom AB – **Tropical Mathematics**

In tropical arithmetic, the sum of two numbers is their maximum and the product of two numbers is their usual sum. Many results familiar from algebra and geometry, including the quadratic formula, the fundamental theorem of algebra, and Bezout's theorem, continue to hold in the tropical world. In this lecture we learn how to draw tropical curves and why evolutionary biologists might care about this.

##### **Lecture 2:**

Friday, August 3, 9:30 a.m. – 10:20 a.m., Ballroom AB – **Convex Algebraic Geometry**

This lecture concerns convex bodies with an interesting algebraic structure. A primary focus lies on the geometry of semidefinite optimization. Starting with elementary questions about ellipses in the plane, we move on to discuss the geometry of spectrahedra, orbitopes, and convex hulls of real varieties.

##### **Lecture 3:**

Saturday, August 4, 9:30 a.m. – 10:20 a.m., Ballroom AB – **The Central Curve in Linear Programming**

The central curve of a linear program is the algebraic curve along which the interior point algorithms travel. We determine the degree, genus, and defining ideal of this curve. These invariants, as well as the total curvature of the curve, are expressed in the combinatorial language of matroid theory. This is joint work with Jesus De Loera and Cynthia Vinzant.



### MAA INVITED ADDRESS

**Amie Wilkinson**, Northwestern University

Thursday, August 2, 9:30 a.m. – 10:20 a.m., Ballroom AB

#### **Chaotic Stability, Stable Chaos**

Viewed from various perspectives, the evolution of a dynamical system over time can appear both orderly and extremely disordered. I will describe some mechanisms behind chaos and stability in dynamics and how in certain contexts this intermixing of behaviors is to be expected.



### MAA INVITED ADDRESS

**Richard Kenyon**, Brown University

Saturday, August 4, 8:30 a.m. – 9:20 a.m., Ballroom AB

#### **Random Interfaces and Limit Shapes**

We discuss how limit shapes and facets form in simple models of random discrete interfaces. In particular, the "lozenge" tiling model is a model of random stepped surfaces; one can write down and solve a PDE that describes the limiting surface (when the mesh size tends to zero) for given boundary frame. The solutions are parametrized by complex analytic functions, in a similar manner to Weierstrass's parametrization of minimal surfaces (soap films) using conformal mappings.

# MAA MathFest 2012

## INVITED ADDRESSES



### MAA INVITED ADDRESS

**Robert Ghrist**, University of Pennsylvania  
Saturday, August 4, 10:30 a.m. – 11:20 a.m., Ballroom AB

#### Putting Topology to Work

Mathematics implicates motions and machines; computations and colorings; the strings and arrows of life. Perhaps the grandest expression of the beauty and power of mathematics is revealed in the quantification and qualification of that which is not there: holes. Topology—the mathematics of holes—will be surveyed with a fresh look at the many ways in which topology is used in data management, networks, and optimization.



### MAA-AMS JOINT INVITED ADDRESS

**David Mumford**, Brown University  
Thursday, August 2, 8:30 a.m. – 9:20 a.m., Ballroom AB

#### The Synergy of Pure and Applied Math, of the Abstract and the Concrete

In the mid-20th century, pure and applied math split, and, in spite of the financial pressure for collaboration exerted by the NSF, they still largely go their own ways. I believe this is damaging to both. In my own experience, math comes alive through an exciting dialectic between theory on the one hand and examples, applications, and experiments on the other. The fantasy of a pecking order topped by the most abstract pure math was canonized by Bourbaki and, as I learned from critical emails last year, is accepted by large segments of the public. I will discuss how I see this affecting both K-12 instruction and the excessive specialization of all branches of math research.



### MAA-AWM ETTA Z. FALCONER LECTURE

**Karen King**, National Council of Teachers of Mathematics  
Friday, August 3, 8:30 a.m. – 9:20 a.m., Ballroom AB

#### Because I Love Mathematics: The Role of Disciplinary Grounding in Mathematics Education

Much like my mentor, Etta Falconer, I enjoy mathematics but have devoted a career to ensuring that students of all walks of life have opportunities to learn important mathematics. The role of the discipline of mathematics, mathematicians' ways of reasoning, and participation in the mathematical community have been a clear part of this work. In this talk, I discuss the recent focus in K-12 mathematics education on the Standards for Mathematical Practice in the Common Core State Standards in Mathematics and the need for teachers and students to be grounded in the reasoning habits of mathematics to ensure opportunities for future students to learn mathematics at the highest levels. Drawing on research and stories of future high school teachers and current middle and high school students, I discuss the ways in which mathematics as a discipline shapes teachers' views of teaching and students' opportunities to learn.



**JAMES R. LEITZEL LECTURE**

**Sylvia Bozeman**, Spelman College  
 Friday, August 3, 10:30 a.m. – 11:20 a.m., Ballroom AB

**The Many Faces of Mentoring**

Project NEXT (New Experiences in Teaching) demonstrated the role of mentoring in a select segment of the mathematics community at a critical point in the career development of those who participated. The Project's success confirmed the value of mentoring and its effectiveness, even when mentoring expands beyond the one-to-one form. This presentation will explore some of the many forms and benefits of structured mentoring, particularly for students at all levels and for young faculty. It will point out the uses of mentoring, along with other activities, to expand the mathematics community, increase its diversity, and enhance the development of its members.



**PI MU EPSILON J. SUTHERLAND FRAME LECTURE**

**Melanie Matchett Wood**, University of Wisconsin, Madison  
 Friday, August 3, 8:00 p.m. – 8:50 p.m., Ballroom AB

**The Chemistry of Primes**

We are familiar with the prime numbers as those integers that cannot be factored into smaller integers, but if we consider systems of numbers larger than the integers, the primes may indeed factor in those larger systems. We discuss various questions mathematicians ask about how primes may factor in larger systems; talk about both classical results and current research on the topic; and give a sense of the kind of tools needed to tackle these questions.



**NAM DAVID BLACKWELL LECTURE**

**Carlos Castillo-Chavez**, Arizona State University  
 Friday, August 3, 1:00 p.m. – 1:50 p.m., Ballroom A

**The Marriage between Disease Dynamics and Mathematics:  
 A History of Success**

The concept of threshold or tipping point, a mathematical dimensionless quantity that characterizes the conditions required for the occurrence of a drastic transition between states, is central to the study of the transmission dynamics and control of diseases such as dengue, influenza, SARS, malaria, and tuberculosis, to name a few. The quantification of tipping point phenomena goes back to the modeling and mathematical work of Sir Ronald Ross (second Nobel laureate in medicine, 1911) and his "students" (Kermack and McKendrick, 1927, 1932). Ross, in fact, proceeded to confront the challenges associated with understanding and managing malaria patterns at the population level right after the completion of his scientific malaria discoveries. The quantification of the concept of tipping point, in the context of epidemiology, has found countless applications directly tied in to the design, development, and implementation of public health policy. Ross's writings emphasized the value of mathematical models as integrators of multilevel information and processes, and his mathematical framework led to the development of a mathematical theory of infectious diseases (an outstanding review of the field can be found in Hethcote, *SIAM Review*, 2000). The overview in this lecture provides a personal perspective on the role of mathematical models in the study of the dynamics, evolution, and control of infectious diseases over multiple scales.

# MAA MathFest 2012

## INVITED ADDRESSES



### MAA LECTURE FOR STUDENTS

**Ivars Peterson**, Mathematical Association of America  
Thursday, August 2, 1:00 p.m. – 1:50 p.m., Ballroom A

#### Geometreks

Few people expect to encounter mathematics on a visit to an art gallery or even a walk down a city street (or across campus). When we explore the world around us with mathematics in mind, however, we see the many ways in which mathematics can manifest itself, in streetscapes, sculptures, paintings, architectural structures, and more. This illustrated presentation offers illuminating glimpses of mathematics, from Euclidean geometry and normal distributions to Riemann sums and Möbius strips, as seen in a variety of structures and artworks in such cities as Washington, D.C.; Philadelphia; Toronto; Montreal; New Orleans; and Madison, Wisconsin.

For full descriptions of Invited Paper Sessions go to the following link:

<http://www.maa.org/mathfest/ips.html>

## An invitation to explore ... <http://mathcircles.org>

### National Association of Math Circles (NAMC)

*Providing resources to create new Math Circles, maintaining a directory of programs, and supporting the development of the Math Circle community.*

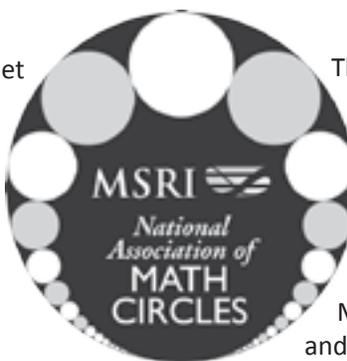
#### What is a Math Circle?

Mathematicians and mathematical scientists meet with pre-college students (and sometimes their teachers) in informal settings to work on interesting problems and topics in mathematics. These interactions excite students about mathematics and provide them with a community to foster their passion for mathematical thinking.

#### The Math Circles Experience

Math Circles emphasize bringing together professional mathematicians and secondary school students on a regular basis for problem solving and mathematical exploration.

The NAMC Website (<http://mathcircles.org>) includes Circle in a Box wiki, Lesson Plans and videos of sample circle sessions, contact information for existing Math Circles, the Math Circle Problem Collection, and a forum for NAMC members to discuss Math Circles. The NAMC site links to the *Circle in a Box* book and *Within the Circle* DVD.



#### The annual NAMC CIRCLE ON THE ROAD

**WORKSHOP** combines a Math Festival with many sample circle sessions. The workshop serves as an introduction to instructional techniques for circle leaders and a laboratory for circle evaluators.

This workshop gives those wishing to start Math Circles a hands-on introduction to activities and the benefit of the advice of experienced circle leaders. If you are unable to attend Circle on the Road you can participate with online videos and other program resources on the NAMC website.

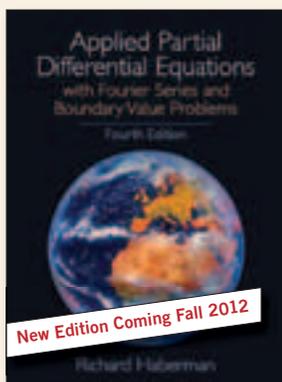


**Math Circle Mini Grants are available for those interested in starting a program. For more information stop by the NAMC Booth!**

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## MATHEMATICS

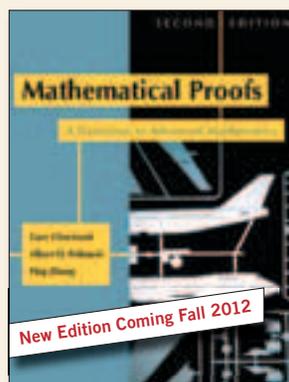
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### Convex Algebraic Geometry

Thursday, August 2, 1:00 p.m. – 5:15 p.m., Ballroom D

Organizers: Bernd Sturmfels, University of California Berkeley, Cynthia Vinzant, University of Michigan

Speakers: Jordan Ellenberg, University of Wisconsin, Jon Hauenstein, North Carolina State University, Greg Blekherman, Georgia Tech, Vicki Powers, Emory University, Amir Ali Ahmadi, Massachusetts Institute of Technology, Bruce Reznick, University of Illinois at Urbana-Champaign

### Applied and Computational Topology

Saturday, August 4, 1:00 p.m. – 4:50 p.m., Ballroom D

Organizers: Benjamin Mann, Ayasdi, Inc., Jack Morava, the Johns Hopkins University

Speakers: Henry Adams, Stanford University, Andrew Blumberg, University of Texas, Justin Curry, University of Pennsylvania, Rafal Komendarczyk, Tulane University, Sanjeevi Krishnan, University of Pennsylvania, Paul Pearson, Fort Lewis College, Jose Perea, Duke University, Michael Robinson, University of Pennsylvania

### Discrete Probability on Surfaces

Saturday, August 4, 1:00 p.m. – 5:15 p.m., Ballroom C

Organizer: Richard Kenyon, Brown University

Speakers: Ivan Corwin, New York University, Timo Seppalainen, University of Wisconsin, Russell Lyons, Indiana University, Benedek Valko, University of Wisconsin, James Propp, University of Massachusetts Lowell, Henry Cohn, Microsoft

### Combinatorics and Matrices

Thursday, 1:00 p.m. – 3:50 p.m., Ballroom C

Organizer: Richard A. Brualdi, University of Wisconsin - Madison

Speakers: T.S. Michael, U.S. Naval Academy, Bridget Tenner, DePaul University, Eric Egge, Carleton College, Adam Berliner, St. Olaf College, In-Jae Kim, University of Minnesota – Mankato, Leslie Hogben, Iowa State University

### Mathematics and Systems Biology

Saturday, 1:00 p.m. – 3:50 p.m., Ballroom B

Organizer: Timothy Comar, Benedictine University

Speakers: Raina Robeva, Sweet Briar College, Brandilyn Stigler, Southern Methodist University, Terrell Hodge, Western Michigan University, Winfried Just, Ohio University, Timothy Comar, Benedictine University

Sponsor: BIO SIGMAA

### Walk the Walk, Talk the Talk

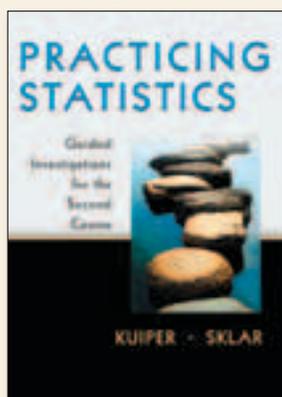
Friday, August 3, 2:00 p.m. – 5:20 p.m., Ballroom C

Organizers: Georgia Benkart, University of Wisconsin-Madison, Tom Halverson, Macalester College

Speakers: Kyle Petersen, DePaul University, Susanna Fishel, Arizona State University, Eric Egge, Carleton College, Kendra Killpatrick, Pepperdine University, Jim Propp, University of Massachusetts Lowell, Sam Hsiao, Bard College, Tom Halverson, Macalester College

## STATISTICS

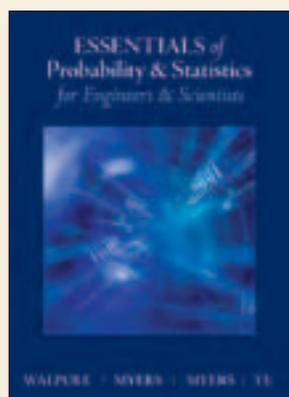
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## CONTRIBUTED PAPER SESSIONS

### Open and Accessible Problems in Number Theory

Thursday, August 2,  
1:00 p.m. – 4:15 p.m., Hall of Ideas E

Organizers: Aliza Steurer, Dominican University; Tom Hagedorn, The College of New Jersey

### Open and Accessible Problems in Combinatorics and Graph Theory

Friday, August 3,  
8:30 a.m. – 11:05 a.m., Hall of Ideas E

Organizers: Cayla McBee, Providence College; Lynette Boos, Providence College

### Engaging Undergraduates in Geometry Courses

**Session 1:** Friday, August 3,  
1:00 p.m. – 3:15 p.m., Hall of Ideas F

**Session 2:** Saturday, August 4,  
1:00 p.m. – 2:55 p.m., Hall of Ideas F

Organizers: Sarah Mabrouk, Framingham State University; James Hamblin, Shippensburg University; M. Brad Henry, Siena College

### Instructional Support Roles for Undergraduates in Mathematics and Statistics

Thursday, August 3,  
1:00 p.m. – 3:35 p.m., Hall of Ideas F

Organizers: Feryal Alayont, Grand Valley State University; Ksenija Simic-Muller, Pacific Lutheran University

### Assessment of Courses for Students in Math-Intensive Majors

Saturday, August 4,  
1:00 p.m. – 2:15 p.m., Hall of Ideas E

Organizers: Aimee Ellington, Virginia Commonwealth University; Catherine Murph, Purdue University  
Sponsor: Committee on Assessment

### Undergraduate Research Activities in Mathematical and Computational Biology

Thursday, August 2,  
1:00 p.m. – 5:35 p.m., Ballroom B

Organizer: Timothy D. Comar, Benedictine University  
Sponsor: BIO SIGMAA

### Inquiry-Based Learning Best Practices

**Session 1:** Friday, August 3,  
9:30 a.m. – 11:25 a.m., Hall of Ideas G

**Session 2:** Friday, August 3,  
1:00 p.m. – 4:55 p.m., Hall of Ideas G

**Session 3:** Saturday, August 4,  
9:30 a.m. – 11:25 a.m., Hall of Ideas G

Organizers: Dana Ernst, Plymouth State University; Angie Hodge, University of Nebraska at Omaha; Stan Yoshinobu, California Polytechnic State University

### Incorporating Writing and Editing into Mathematics Classes

**Session 1:** Thursday, August 2,  
10:40 a.m. – 11:55 a.m., Hall of Ideas H

**Session 2:** Thursday, August 2,  
1:00 p.m. – 4:35 p.m., Hall of Ideas H

Organizers: Martin Montgomery, Sam Houston State University; Ryan Stufflebeam, Transylvania University

### Recreational Mathematics: New Problems and New Solutions

**Session 1:** Friday, August 3,  
1:00 p.m. – 3:15 p.m., Hall of Ideas E

**Session 2:** Saturday, August 4,  
9:30 a.m. – 11:45 a.m., Hall of Ideas H

Organizer: Paul Coe, Dominican University; Kristen Schemmerhorn, Dominican University

### The History of Mathematics and its Uses in Teaching and Learning Mathematics

Friday, August 3,  
1:00 p.m. – 2:55 p.m., Hall of Ideas H

Organizers: Kelli Slaten, University of North Carolina Wilmington; Scott Guthery, Docent Press

Sponsor: HOM SIGMAA

### Math Circles for Students and Teachers

Thursday, August 2,  
1:00 p.m. – 4:15 p.m., Hall of Ideas G

Organizers: James Tanton, St. Mark's Institute of Mathematics; Tatiana Shubin, San Jose State University; Sam Vandervelde, St. Lawrence University

Sponsor: SIGMAA MCST

### General Contributed Paper Sessions

Organizers: David Housman, Goshen College; Nancy Neudauer, Pacific University

### Research in Graph Theory or Combinatorics

Thursday, August 2, 8:00 a.m. – 9:25 a.m.  
Meeting Room Q

### Interdisciplinary Topics in Mathematics

Thursday, August 2, 8:00 a.m. – 10:10 a.m.  
Meeting Room R

### Teaching or Learning Introductory Mathematics

Thursday, August 2, 1:00 p.m. – 4:40 p.m.  
Meeting Room Q

### Mathematics and Technology

Thursday, August 2, 2:30 p.m. – 4:25 p.m.  
Meeting Room R

### History or Philosophy of Mathematics

Friday, August 3, 8:00 a.m. – 10:25 a.m.  
Meeting Room Q

### Modeling, Applications, Probability, or Statistics

Friday, August 3, 8:00 a.m. – 10:10 a.m.  
Meeting Room R

### Teaching or Learning Calculus

Friday, August 3, 1:00 p.m. – 5:25 p.m.  
Meeting Room Q

### Research in Algebra, Topology, or Analysis

Friday, August 3, 1:00 p.m. – 3:55 p.m.  
Meeting Room R

### Assessment, Mentoring, or Outreach

Saturday, August 4, 8:00 a.m. – 10:25 a.m.  
Meeting Room Q

### Research in Applied Mathematics

Saturday, August 4, 8:00 a.m. – 10:10 a.m.  
Meeting Room R

### Teaching and Learning Advanced Mathematics

Saturday, August 4, 1:00 p.m. – 2:55 p.m.  
Meeting Room Q

### Research in Number Theory, Geometry, or Linear Algebra

Saturday, August 4, 1:00 p.m. – 3:10 p.m.  
Meeting Room R



The following is a list of activities at MathFest 2012 that are sponsored by SIGMAAs. Full descriptions of the sessions may be found elsewhere in the program or by going to the web site: <http://www.maa.org/mathfest/sigmaa.html>.

**Mathematical and Computational Biology: BIO SIGMAA**

**Invited Paper Session: Mathematics and Systems Biology**  
 Saturday, 1:00 p.m. – 3:50 p.m., Ballroom B

**Contributed Paper Session: Undergraduate Research Activities in Mathematical and Computational Biology**  
 Thursday, 1:00 p.m. – 5:15 p.m., Ballroom B

**History of Mathematics: HOM SIGMAA**  
**Contributed Paper Sessions: The History of Mathematics and its Uses in Teaching and Learning Mathematics**  
 Friday, 1:00 p.m. – 2:55 p.m., Hall of Ideas H

**Math Circles for Students and Teachers: SIGMAA MCST**  
**Contributed Paper Sessions: Fostering, Supporting and Propagating Math Circles for Students and Teachers**  
 Thursday, 1:00 p.m. – 4:15 p.m., Hall of Ideas G

**Math Circles Demonstration Classes**  
**Session 1:** Saturday, 9:30 a.m. – 10:30 a.m., Hall of Ideas E  
**Session 2:** Saturday, 11:00 a.m. – 12:00 p.m., Hall of Ideas E

**Philosophy of Mathematics: POM SIGMAA**  
**Reception**  
 Friday, August 3, 5:00 p.m. – 5:30 p.m., Hall of Ideas H

**Guest Lecture**  
 Friday, August 3, 5:30 p.m. – 6:30 p.m., Hall of Ideas H  
 Speaker: Janet Folina, Macalester College  
 Title: Is the Proof in the Picture? Seeing, Believing, and Proving

**Quantitative Literacy: SIGMAA QL Panel Discussion: Effective Strategies for Teaching Classes for Non-Majors**  
 Friday, August 3, 4:10 p.m., Ballroom B

**Research in Undergraduate Mathematics Education: SIGMAA RUME Supporting Students' Reinvention of Formal Limit Definitions**  
**Session 1:** Thursday, August 2, 4:10 p.m. – 5:30 p.m., Hall of Ideas F  
**Session 2:** Friday, August 3, 4:10 p.m. – 5:30 p.m., Hall of Ideas F

**Teaching Advanced High School Mathematics: SIGMAA TAHSM Panel Discussion: How Will CCSSM Influence High School and College Mathematics?**  
 Saturday, August 4, 1:00 p.m. – 2:20 p.m., Lecture Hall

**Business Meeting**  
 Saturday, August 4, 5:00 p.m. – 5:30 p.m., Hall of Ideas F

**Engaging High School Students in Research Experiences**  
 Saturday, August 4, 5:30 p.m. – 6:30 p.m., Hall of Ideas F

**Mathematics Instruction Using the Web: WEB SIGMAA Panel Discussion: Designing Studies to Measure the Effectiveness of Online Homework**  
 Friday, August 3, 1:00 p.m. – 2:20 p.m., Lecture Hall

**Business Meeting, Reception and Discussion**  
 Friday, 5:00 p.m. – 6:30 p.m., Hall of Ideas E

**MAA-AMS Special Session What Mathematics Should Every Citizen Know – and How Does K-16 Get Us There?**  
 Friday, August 3, 1:00 p.m. – 4:45 p.m., Ballroom D  
 Organizers: David Mumford, Brown University



### **MAA-PME Student Reception**

Wednesday, August 1, 4:30 p.m. – 5:30 p.m.  
Hall of Ideas G

### **Face Off!**

Wednesday, August 1,  
5:30 p.m. – 6:30 p.m., Hall of Ideas E

Organizers: Ken Price and Steve Szydluk,  
University of Wisconsin Oshkosh

### **Student Hospitality Center**

Thursday, August 2, 9:00 a.m. - 5:00 p.m.,  
Exhibit Hall

Friday, August 3, 9:00 a.m. - 5:00 p.m.,  
Exhibit Hall

Saturday, August 4, 9:00 a.m. - 12:30 p.m.,  
Exhibit Hall

Organizers: Richard and Araceli Neal,  
American Society for the Communica-  
tion of Mathematics

### **MAA Lecture For Students – Geometreks**

Thursday, August 2, 1:00 p.m. – 1:50 pm  
Ballroom A

Ivars Peterson, Mathematical Association  
of America

### **MAA Undergraduate Student Activity**

#### **Entertaining Math: Juggling, Magic and Circus Tricks**

Friday, August 3, 1:00 p.m. – 1:50 pm  
Ballroom B

Speaker: Tim Chartier, Davidson College

### **MAA Undergraduate Student Activity**

#### **Mathematical Untuition – Just How Far Astray Can Your Mathematical Common Sense Mislead You?**

Friday, August 3, 1:00 p.m. – 1:50 pm  
Ballroom C

Speaker: Brian Conrey, American  
Institute of Mathematics

### **MAA Student Paper Sessions**

Thursday, August 2, 8:30 a.m. – 10:25 a.m.  
and 2:00 p.m. – 6:15 p.m.

Friday, August 3, 8:30 a.m. – 11:45 a.m.  
and 2:00 p.m. – 6:15 p.m.

J. Lyn Miller, Slippery Rock University;  
Daluss Siewert, Black Hills State  
University

### **Pi Mu Epsilon Student Paper Sessions**

Thursday, August 2, 2:00 p.m. – 6:15 p.m.,  
Meeting Rooms O and P

Friday, August 3, 8:30 a.m. – 10:30 a.m.  
and 2:00 p.m. – 5:00 p.m.,  
Meeting Rooms O and P

Angela Spalsbury, Youngstown State University

### **Pi Mu Epsilon Student Banquet and Awards Ceremony**

Friday, August 3, 6:00 p.m. – 7:45 p.m.,  
Community Terrace

### **Pi Mu Epsilon J. Sutherland Frame Lecture**

Friday, August 3, 8:00 p.m. – 8:50 p.m.,  
Ballroom AB

### **The Chemistry of Primes**

Speaker: Melanie Matchett Wood, University  
of Wisconsin Madison

### **MAA Ice Cream Social**

Friday, August 3, 9:00 a.m. – 10:00 p.m.,  
Community Terrace

### **MAA Mathematical Competition in Modeling (MCM) Winners**

Saturday, August 4, 9:00 a.m. – 10:30 a.m.  
Hall of Ideas F

Organizer: Ben Fusaro, Florida State  
University

### **Student Problem Solving Competition**

Saturday, August 4, 1:00 p.m. – 2:15 p.m.  
Hall of Ideas H

Sponsor: Richard Neal, American Society  
for the Communication of Mathematics

### **Great Talks for a General Audience: Coached Presentations by Gradu- ate Students**

Saturday, August 4, 1:00 p.m. – 5:30 p.m.  
Meeting Rooms K&L

Organizers: Jim Freeman, Cornell College  
and Rachel Schwell, Central Connecticut  
State University

Sponsors: Committee on Graduate  
Students and the Young Mathematicians  
Network

# GRADUATE STUDENT ACTIVITIES

## Graduate Student Workshop

### What's the Story? A Graduate Student Workshop on Creating a Research Presentation for Undergraduates

Thursday, August 2, 1:00 p.m.– 2:20 p.m.  
Meeting Room R

Organizer: Rachel Schwell, Central Connecticut State University

Sponsor: MAA Committee on Graduate Students

## Graduate Student Reception

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

Organizers: Estela A. Gavosto, University of Kansas.; James Freeman, Cornell College

## Student Poster Session

### PosterFest 2012: A Poster Session of Scholarship by Early Career Mathematicians and Graduate Students

Friday, August 3, 3:00 p.m. – 4:30 p.m.  
Exhibit Hall

Organizer: Jennifer Roche Bowen, The College of Wooster

Sponsors: Early Career Mathematicians Committee; Graduate Student Committee; Young Mathematicians Network

## Special Session for Graduate Students

### Great Talks for a General Audience: Coached Presentations by Graduate Students

Saturday, August 4, 1:00 p.m. – 5:30 p.m.  
Meeting Rooms K&L

Organizers: Jim Freeman, Cornell College; Rachel Schwell, Central Connecticut State University

Sponsors: Committee on Graduate Students; Young Mathematicians Network

## Panel Discusson

### The Job Search I: How to Apply for Jobs – Lessons for Academia and Industry

Thursday, August 2, 2:35 p.m. – 3:55 p.m.  
Lecture Hall

Organizer: Estela A. Gavosto, University of Kansas

Panelists: James Freeman, Cornell College; Will Hickman, Epic Systems Corporation; Joanne Peoples, El Paso Community College; Kimberly Roth, Juniata College; Erika Ward, Jacksonville University

Sponsor: MAA Committee on Graduate Students

## Panel Discussion

### The Job Search II: Interviewing and Hiring for Academic Jobs – Lessons from Both Sides of the Trenches

Thursday, August 2, 4:10 p.m. – 5:30 p.m.  
Lecture Hall

Organizer: Jenna P. Carpenter, Louisiana Tech University

Panelists: Gulden Karakok, University of Northern Colorado; John Travis, Mississippi College; John Hamman, Montgomery College Germantown Campus; Louis Deaett, Quinnipiac University; and Michael Stob, Calvin College

Sponsor: Professional Development Committee

**For full descriptions of student activities, visit:**

Undergraduate  
[http://www.maa.org/mathfest/undergrad\\_students.html](http://www.maa.org/mathfest/undergrad_students.html)

Graduate  
[http://www.maa.org/mathfest/grad\\_students.html](http://www.maa.org/mathfest/grad_students.html)

### **PosterFest 2012: A Poster Session of Scholarship by Early Career Mathematicians and Graduate Students**

Friday, August 3, 3:00 p.m. – 4:30 p.m.  
Exhibit Hall

Organizer: Jennifer Roche Bowen, The College of Wooster

Sponsors: Early Career Mathematicians Committee; Graduate Student Committee; Young Mathematicians Network

### **What's the Story? A Graduate Student Workshop on Creating Research Presentations for a General Audience**

Thursday, August 2, 1:00 p.m. – 2:20 p.m.  
Meeting Room R

Organizer: Rachel Schwell, Central Connecticut State University

Sponsors: Committee on Graduate Students; Young Mathematicians Network.

### **Writing for MAA Journals**

Saturday, August 4, 1:00 p.m. – 2:20 p.m.  
Hall of Ideas G

Organizer: Michael Henle, Oberlin College

### **Proposal Writing Workshop for Grant Applications to the NSF Division of Undergraduate Education**

Friday, August 3, 4:10 p.m. – 5:20 p.m.  
Ballroom A

Organizers: Ron Buckmire and Lee Zia, Division of Undergraduate Education, National Science Foundation

### **MAA Prize Session**

Friday, August 3, 11:30 a.m. – 11:50 a.m.  
Ballroom AB

### **Alder Award Session**

Friday, August 3, 2:00 p.m. – 3:20 p.m.  
Ballroom A

### **MAA Business Meeting**

Saturday, August 4, 11:30 a.m. – 11:50 a.m.  
Ballroom AB

### **MAA Section Officers Meeting**

Thursday, August 2, 3:00 p.m.,  
Sheraton Hotel – Inspiration Ballroom



**Effective Strategies for Teaching Classes for Non-Majors**

Friday, August 3, 4:10 p.m. – 5:30 p.m.  
Ballroom B

Organizers: Gizem Karaali, Pomona College; Feryal Alayont, Grand Valley State University; Lerna Pehlivan, York University

Panelists: Michael Starbird, University of Texas Austin; Judith Grabiner, Pitzer College; Andrew Miller, Belmont University; Rachelle DeCosta, Wheaton College

Sponsor: SIGMAA QL

**Designing Studies to Measure the Effectiveness of Online Homework**

Friday, August 3, 1:00 p.m. – 2:20 p.m.  
Lecture Hall

Organizers: John Travis, Mississippi College; Jason Aubrey, University of Missouri

Panelists: Flora McMartin, Broad-Based Knowledge; Andy Bennet, Kansas State University; Aaron Wangberg, Winona State University; Dale Dawes, City University of New York–Borough of Manhattan Community College

Sponsors: Committee on Technologies in Mathematics Education; WEB SIGMAA

**An Update on the Mathematical Education of Teachers II Report**

Friday, August 3, 4:10 p.m. – 5:30 p.m.  
Lecture Hall

Organizers: Angie Hodge, University of Nebraska Omaha; Beth Burroughs, Montana State University; Judith Covington, University of Louisiana Shreveport

Panelists: William McCallum, University of Arizona; Al Cuoco, Educational Development Center; Alan Tucker, State University of New York at Stony Brook

Sponsor: Committee on the Mathematical Education of Teachers (COMET)

**Issues for Early Career Mathematicians in Academia**

Friday, August 3, 2:35 p.m. – 3:55 p.m.  
Lecture Hall

Organizer: Doug Ensley, Shippensburg University

Panelists: Rick Cleary, Bentley University; Jennifer Quinn, University of Washington Tacoma; Robert Talbert, Grand Valley State University

Sponsor: Committee on Early Career Mathematicians

**How Will CCSSM Influence High School and College Mathematics?**

Saturday, August 4, 1:00 p.m. – 2:20 p.m.  
Lecture Hall

Organizers: Caren Diefenderfer, Hollins University; Semra Kilic-Bahi, Colby-Sawyer College; Martha Siegel, Towson University

Panelists: Meg Meyer, University of Wisconsin, Madison; Dan Teague, North Carolina School of Science and Mathematics; Kristin Umland, University of New Mexico

Sponsors: Committee on the Undergraduate Program in Mathematics (CUPM); SIGMAA TAHSM; SIGMAA QL

**Contemporary Approaches to Intermediate Algebra**

Thursday, August 2, 2:35 p.m. – 3:55 p.m.  
Ballroom A

Organizers: Barbara Edwards, Oregon State University; Sarah L. Mabrouk, Framingham State University

Panelists: Don Small, U.S. Military Academy; Suzanne Doree, Augsburg College; Ann Sitomer, Portland Community College.

Sponsor: Curriculum Renewal Across the First Two Years (CRAFTY)

**Mentoring Undergraduates on Research: A Kaleidoscope of Models**

Friday, August 3, 2:35 p.m. – 3:55 p.m.  
Ballroom B

Organizer: Jenna P. Carpenter, Louisiana Tech University

Panelists: Patrick Bahls, University of North Carolina at Asheville; Francis Su, Harvey Mudd College; Michael Dorff, Brigham Young University; Annalisa Crannell, Franklin & Marshall College

Sponsor: Professional Development Committee

**The Job Search I: How to Apply for Jobs – Lessons for Academia and Industry**

Thursday, August 2, 2:35 p.m. – 3:55 p.m.  
Lecture Hall

Organizer: Estela Gavosto, University of Kansas

Sponsor: Committee on Graduate Students

**The Job Search II: Interviewing and Hiring for Academic Jobs – Lessons from Both Sides of the Trenches**

Thursday, August 2, 4:10 p.m. – 5:30 p.m.  
Lecture Hall

Organizer: Jenna P. Carpenter, Louisiana Tech University

Sponsor: Professional Development Committee

**CUPM “Birds of a Feather” Course Area Panel & Discussion: Mathematics Majors for 2015 and Beyond**

Saturday, August 4, 2:35 p.m. – 3:55 p.m.  
Lecture Hall

Organizer: Martha Siegel, Towson University

Sponsor: Committee on the Undergraduate Program in Mathematics (CUPM)

**Parenthood on the Tenure Track**

Thursday, August 2, 1:00 p.m. – 2:20 p.m.  
Lecture Hall

Organizers: Jacqueline Jensen, Slippery Rock University; Magnhild Lien, California State University Northridge; Maura Mast, University of Massachusetts Boston

Sponsor: Association for Women in Mathematics

**SUMMA Session for Prospective REU Mentors**

Thursday, August 2, 4:10 p.m. – 5:20 p.m.  
Ballroom A

Organizers: William Hawkins, Jr., MAA and University of the District of Columbia; Robert Megginson, University of Michigan



### 1 Mathematics for Business Decisions

**Marilou Mendel**, Pima Community College

Part 1, Thursday, August 2, 1:00 p.m. - 3:00 p.m.

Part 2, Friday, August 3, 1:00 p.m. - 3:00 p.m.

Hall of Ideas I

This minicourse will provide participants with an overview of the MAA-published Mathematics for Business Decisions, with emphasis on recent enhancements to the program. Mathematics for Business Decisions is a two-semester sequence of courses designed for undergraduate business students. Mathematical and computer tools are studied in the context of four major, real-world business projects. Working in teams, the students develop solutions for the projects and prepare oral and written reports on the projects. We will explore how Mathematics for Business Decisions is implemented in the classroom as we work through one of the projects. In addition, we will discuss the resources available to assist instructors who choose to adopt this unique program. Participants are encouraged to bring a computer with Microsoft Windows XP, Vista, or Windows 7; and Excel, PowerPoint, and Word from Microsoft Office 2007 or 2010. All other materials will be provided.

### 2 WeBWork Homework Problems with Embedded Flash Applets

**Barbara Margolius**, Cleveland State University; **Dan Gries**, The Hopkins School; and **Felipe Martins**, Cleveland State University

Part 1, Thursday, August 2, 1:00 p.m. - 3:00 p.m.

Part 2, Friday, August 3, 1:00 p.m. - 3:00 p.m.

Hall of Ideas J

In this minicourse participants will learn how to write WeBWork homework problems that incorporate Flash applets. We will give an overview of WeBWork resources, including the National Problem Library, the MAA wiki, model courses, and instructor tools. Participants will learn how to write basic WeBWork problems that do not involve applets. Next, we will demonstrate how to write problems for existing Flash applets. We will conclude with a discussion of what resources participants would like to see developed and what resources are available for those who wish to write their own applets to embed in WeBWork problems. Bring a laptop with wireless capability.

### 3 Mathemagic with a Deck of Cards

**“Card Colm” Mulcahy**, Spelman College

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

Part 2, Saturday, August 4, 3:30 p.m. - 5:30 p.m.

Hall of Ideas I

There seems to be no end to the mathematical things one can explore with a simple deck of cards, from algebra and combinatorics to probability and statistics. We'll survey a wealth of such material, both classical and recent. A special feature will be examples of “two-person mathemagic,” in which communication is done via nontrivial previously agreed mathematical conventions. The material can be used to liven up many mathematics classes and provides jumping-off points for undergraduate independent study.

#### 4 Making Math Relevant: A Multidisciplinary Sustainability Module for Calculus

**Thomas J. Pfaff** and **Jason Hamilton**, Ithaca College

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

Part 2, Saturday, August 4, 3:30 p.m. - 5:30 p.m.

Hall of Ideas J

Do you want to improve student engagement and understanding of the relevance of calculus to everyday life, without sacrificing typical content? This minicourse will bring together data, Excel, sustainability, and a multidisciplinary approach to provide richer context and relevance for calculus. The module has students consider the 21st-century problem: What are the current and future impacts of global climate change on polar bears? Students then use real data and Excel, write a technical report, read reports written by students in data structures, ecology, and thermodynamics, and then complete a summary assignment to bring together the information for all disciplines. This minicourse provides the background information to successfully use the module, along with data sets and ideas for sustainability exercises. Participants will need Excel loaded onto their laptops and are encouraged to bring a calculator.

#### 5 The Mathematics of Folding & Unfolding

**Joseph O'Rourke**, Smith College

Part 1, Thursday, August 2, 3:30 p.m. - 5:30 p.m.

Part 2, Saturday, August 4, 1:00 p.m. - 3:00 p.m./

Hall of Ideas I

How many ways are there to flatten a cube? How can you cut out block letters for a whole word all at once with one straight scissors cut? Can every polygon fold to a polyhedron? These questions can be answered through the mathematics of folding and unfolding. We will study the mathematics underlying origami and unfolding of polyhedra, introducing fascinating combinatorial and geometric concepts that let students supplement their mathematical understanding with physical intuition. They can check conjectures and proofs by manipulating paper in their hands. These problems reach the frontiers of current mathematical research and provide accessible unsolved problems.

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

**David Housman**, Goshen College

Part 1, Thursday, August 2, 3:30 p.m. - 5:30 p.m.

Part 2, Saturday, August 4, 1:00 p.m. - 3:00 p.m./

Hall of Ideas J

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 minicourse develops some of the material used by the presenter in general education and math major courses on game theory and encourages participants to develop their own, similar, courses.

# MAA MathFest 2012 ALDER AWARDS

In January 2003, the MAA established the Henry L. Alder Award for Distinguished Teaching by a Beginning College or University Mathematics Faculty Member to honor beginning college or university faculty whose teaching has been extraordinarily successful and whose effectiveness in teaching undergraduate mathematics is shown to have influence beyond their own classroom. Every year, at most, three college and university teachers are honored with this national award.

## Award Recipient Presentations

Friday, August 3, 2012  
2:00 p.m. - 3:20 p.m., Ballroom A

## 2012 Honorees

**Kathryn Leonard**, California State University Channel Islands

**Susan Martonosi**, Harvey Mudd College

**Michael A. Posner**, Villanova University

## I Failed and No One Died

**Kathryn Leonard**, California State University Channel Islands

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

Michael Starbird has described mathematics as “the process of becoming progressively less wrong”. Indeed, our first attempt at solving a problem almost always fails.

The eventual solution depends on our ability to extract meaning from failure, reformulating our mistakes into a new approach. Despite the familiarity with failure implied by that process, we typically drape the word in dour, black tones—this student failed the midterm, that colleague failed to get a grant, the person in question is now a failure—and follow it with concerned head shaking and averted eyes. Contrarily, this talk will describe some of my attempts to embrace failure and to help my students do the same.

## An ORnate ORation on OR

**Susan Martonosi**, Harvey Mudd College  
Friday, August 3, 2:30 p.m. – 2:50 p.m.

Operations research (OR) is the use of mathematical thinking to make systems, processes and decisions more efficient. It is naturally appealing to mathematics students who want to understand how the mathematical theory they are learning can be applied to solve important problems. At Harvey Mudd College, student interest in OR has been consistently growing in response to increased course offerings, research opportunities and industry-sponsored capstone projects. In this talk (which, in truth, is unlikely to be ornate) I'll discuss the field of OR and its appeal to students, the OR curriculum we have in place, and best practices (along with pitfalls to avoid) in introducing OR to your students.

## Practicing What We Preach: Evidence-Based Evaluation of Your Classroom Teaching and Pedagogical Innovations

**Michael A. Posner**, Villanova University  
Friday, August 3, 3:00 p.m. – 3:20 p.m.

Every teacher is unique. Some of us have impeccable recall, some are experts in applications while other revel in the more theoretical, some are incredibly organized, and others might deserve an off-Broadway production. Therefore, the way we teach should be unique and personal as well. Some lecture very effectively, some use inquiry-based learning, some show videos, some have class projects, some create applets or apps. But the common themes of what makes good teachers are engaging students to master learning objectives and, perhaps, inspire them to learn more. Yet, when we evaluate our teaching or try out something new in the classroom, we rely on personal feelings or voluntary student feedback. I have sought to explore the efficacy of my teaching through classroom-based studies. I will share several of those classroom-based studies, describing both the process and the outcomes, and explore strategies that you can use to engage in your own research on your pedagogical innovations.



The Mathematics Department at UCR is one of the few places in the country that offers diversity in research, small hands-on classes and the unique opportunity to learn from some of the most prominent mathematicians.

At UCR, our graduate program emphasizes strong faculty interaction in order to gain maximum benefit from course work. First, it allows students to explore new mathematical understanding in both personal and social contexts. Secondly, it immerses students deeply in exploration, inquiry and analysis. Finally, it familiarizes students with the ever-changing body of research literature related to learning and teaching mathematics and contemporary research methodologies.

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### Financial Support:

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**American Mathematical Society (AMS)**

**Booth # 8 & 9**

The American Mathematical Society (AMS) publishes books, journals (electronic and print), and MathSciNet-the Mathematical Reviews Database. Our top-tier research publications span the entire spectrum of pure and applied mathematics for professionals, graduate students, and advanced undergraduates. For more information or to purchase AMS publications, go to <http://www.ams.org/bookstore>.

**Association for Women in Mathematics (AWM)**

**Booth # 43**

The Association for Women in Mathematics (AWM) is a non-profit organization founded in 1971. The purpose of the Association for Women in Mathematics is to encourage women and girls to study and to have active careers in the mathematical sciences, and to promote equal opportunity and the equal treatment of women and girls in the mathematical sciences. AWM currently has more than 3000 members (women and men) representing a broad spectrum of the mathematical community – from the United States and around the world!

**Cambridge University Press**

**Booth # 19**

Cambridge's publishing in books and journals combines state-of-the-art content with the highest standards of scholarship, writing and production. Visit our stand to browse new titles, available at a 20% discount, and to pick up sample issues of our journals. Visit our website to see everything we do: <http://www.cambridge.org/us/>.

**Flat World Productions**

**Booth # 20**

Be among the first to own "Flatland2: Sphereland"! We will have copies of the brand new movie featuring the voices of Kristen Bell, Michael York and Danica McKellar for sale at our booth. In addition, you can pick up a copy of the original "Flatland" movie and copies of the book. To watch a trailer please visit [www.SpherelandTheMovie.com](http://www.SpherelandTheMovie.com).

**Hawkes Learning Systems SPONSOR**

**Booth # 21 & 22**

With over 30 years of experience in specializing in mathematics courseware, Hawkes Learning Systems knows what it takes to provide the best learning tools in order to help students succeed. Hawkes courseware motivates students through its unique approach to mastery learning which promotes grade improvement and encourages students by engaging them in the learning process. The courseware provides students with interactive instruction, step-by-step tutorials, unlimited practice, error-specific feedback for incorrect answers, and mastery-based homework assignments. With Hawkes, we believe: Students matter. Success counts.

**Involve**

**Booth # 6**

"Involve, a Journal of Mathematics" is published by the nonprofit organization Mathematical Sciences Publishers (MSP), and is dedicated to showcasing and encouraging high-quality mathematical research involving students from all academic levels. The editorial board con-



sists of mathematical scientists, each of whom is personally committed to nurturing student participation in research. *Involve* is a publication in between the extremes of purely undergraduate-research journals, which in general are written for undergraduate audiences, and mainstream research journals. Such a venue is an important asset to mathematicians wishing to encourage the creative involvement of students. For further information on MSP and *Involve* please visit <http://msp.org/>.

### **Jones & Bartlett Learning**

#### **Booth # 38 & 39**

Jones & Bartlett Learning, a division of Ascend Learning, is a world-leading provider of instructional, assessment and learning-performance management solutions for the secondary, post-secondary, and professional markets. We endeavor to develop educational programs and services that improve learning outcomes and enhance student achievement by uniquely combining authoritative content written by respected authors with innovative, proven and engaging technology applications that meet the diverse needs of today's instructors, students, and professionals.

### **Liberty Mutual Group (LMG)**

#### **Booth # 7**

Liberty Mutual Group, a Fortune 100 company, is a diversified international group of insurance companies with 45,000 employees in 900 offices worldwide. Liberty Mutual Actuaries use their analytical talents to resolve thought-provoking business problems and bring value to our Customers. They work in a collaborative and dynamic work environment where the challenges are on going. Our Actuaries regularly make recommendations to management and are partners in the decision making process. They provide business advice and support senior management by providing analysis critical to the key functions of our business. Actuarial Students in our Development Program, have an excellent opportunity to acquire a wide range of business experience within our Commercial, Personal, Agency and International business units. They gain experience with our products while working in a variety of disciplines such as financial reporting, ratemaking, reinsurance, research, reserving, underwriting, etc. Actuarial Interns are also an important part of our Development Program. Our Interns perform meaningful work in an environment that supports their learning.

### **Maplesoft SPONSOR**

#### **Booth # 23**

Maplesoft's core technology is the world's most advanced symbolic computation engine, which is the foundation for all of its products, including Maple™, the technical computing and documentation environment; Maple T.A., a web-based system for creating and assessing online tests and assignments; and the Maple T.A. MAA Placement Test Suite which offers the renowned Mathematical Association of America (MAA) placement tests in an online environment.

### **Math for America SPONSOR**

#### **Booth # 4 & 5**

Math for America (MfA) is a nonprofit organization with a mission to improve mathematics education in US public secondary schools by recruiting, training and retaining outstanding mathematics teachers.

**Mathematical Association of America - American Mathematics Competitions**

**MAA Pavilion**

The Mathematical Association of America (MAA) is the largest professional society that focuses on mathematics accessible at the undergraduate level. Books, journals, DVDs, an online homework source, professional development programs, and competitions are just some of the offerings available from the MAA. Stop by the MAA Pavilion to learn how your institution can use the competitions as an outreach and recruitment opportunity, for example, and browse our sales on selected titles and merchandise throughout the meeting.

**McGraw-Hill Higher Education**

**Booth # 24**

McGraw-Hill Higher Education is a leading innovator in the development of 21st century teaching and learning solutions for postsecondary and higher education markets worldwide. We empower and prepare professionals and students through a comprehensive range of traditional and digital education content and tools to connect, learn and succeed.

**National Association of Math Circles SPONSOR**

**Booth # 26 & 27**

The National Association of Math Circles provides a community for Math Circles and similar programs via a website <http://mathcircles.org>. This fun and interactive website includes a database of Math Circles worldwide, a wiki started by Sam Vandervelde's Circle in a Box Math Circle book, a Math Circle Problem and Lesson Collection, as well as a developing forum for discussion of Math Circle related ideas. Visit our booth to learn more or attend one of the SIGMAA-MCST sessions to learn more about Math Circles.

**Pearson SPONSOR**

**Booth # 2 & 3**

A leading publisher in mathematics and statistics, Pearson provides course content from respected authors. Our online teaching and learning tools are used by millions of students and instructors worldwide.

**Springer**

**Booth # 44**

Visit the Springer booth and get further acquainted with an abundant selection of top-notch titles by award-winning authors and highly cited journals in all areas of Mathematics. Books specially discounted!

**Taylor & Francis/CRC Press SPONSOR**

**Booth #14 & 15**

Taylor & Francis – CRC Press is a premier publisher in mathematics, sciences and engineering textbooks, professional manuals, reference works, journals and electronic databases. Please visit our booth to peruse our titles, receive special convention discounts 15% - 25% and free print samples and vouchers for free online access to many of our Journals are available at the booth.

### **University of California-Riverside**

#### **Booth # 16**

The University of California at Riverside, Mathematics Department is pleased to join this event. With 39 Ph.D. programs, 37 Master's programs and 17 state teaching credential programs, UCR offers a wide range of opportunities for graduate study and research. As the fastest growing university in the University of California system we have constructed new, state-of-the-art buildings and developed new graduate programs to provide unprecedented opportunities for our graduate students. We will have a representative on hand to give you information about the UCR Mathematics Graduate programs in Pure and Applied Math as well as current graduate students in the Ph.D. program to talk to you more in depth about what it means to be a member of the Mathematics Department and answer any questions you may have.

### **University of Wisconsin - Madison**

#### **Booth # 18**

The Department of Biostatistics & Medical Informatics is home to internationally recognized faculty engaged in both collaborative and methodological research who have flourished in the university's deep culture of collaborative interdisciplinary science. Faculty areas of expertise include biostatistics applied to pre-clinical, clinical and population health research; biomedical and clinical informatics; and statistical genetics and genomics. Members of the department collaborate with scientists and clinicians from departments and centers across the UW campus and the state, including the Institute for Clinical and Translational Research, the Carbone Cancer Center, and the Marshfield Clinic Research Foundation. The Department maintains strong ties to the world-class Departments of Statistics and of Computer Sciences at UW-Madison, through which most graduate students are trained. In addition, it also hosts two undergraduate summer research programs: The Summer Institute for Training in Biostatistics (SIBS) and the summer research program in Computational Biology and Biostatistics (CBB).



### **Virginia Military Institute Center for Leadership and Ethics**

#### **Booth # 28**

The Center for Leadership and Ethics seeks to provide programs that focus on realizing the full potential of the leadership and character development experiences available to the Corps of Cadets at the Institute. In addition to enhancing the experience of current cadets, the Center offers programs in leadership and ethics in a

variety of platforms to a broader national audience. On 1-3 October, the center will host the 2012 Science, Technology, Engineering and Math (STEM) Education Conference. The first of a three-year conference series, the 2012 conference will focus on mathematics as a gateway to STEM success. Stop by the booth to learn more!

**WebAssign SPONSOR**

**Booth # 42**

WebAssign, the independent online homework and assessment solution, continues to innovate. With robust new tools and pre-coded questions from over 250 leading math and statistics titles from every major publisher (including open text solutions), WebAssign is your indispensable partner in education. WebAssign's new patent-pending Answer Evaluation and Grading Engine is powerful new functionality that interprets and evaluates student responses mathematically, grading answers just like you do. Visit [www.webassign.net](http://www.webassign.net) or stop by our booth to learn more.

**W.H. Freeman**

**Booth # 1**

W.H. Freeman publishes high-quality textbooks and media in mathematics and statistics. Visit our website to learn about our new and popular titles, including Rogawski *Calculus*, COMAP *For All Practical Purposes*, Shifrin *Linear Algebra*, Sowder *Reconceptualizing Mathematics*, Moore *Essential Statistics*, Larose *Discovering Statistics*, and Kokoska *Introductory Statistics*, among many others. Stop by to also see demonstrations of our innovative media and online homework systems, including CalcPortal, MathPortal, StatsPortal, and the new Statistics Video Tool Kit.

**Wiley**

**Booth # 31**

Founded in 1807, John Wiley & Sons, Inc. is an independent, global publisher of print and electronic products. Wiley specializes in scientific and technical books, journals, textbooks and education materials, and professional and consumer books and subscription services. Visit <http://www.wiley.com>.

**Worldwide Center of Mathematics**

**Booth # 29**

The Worldwide Center of Mathematics was founded by David B. Massey, an award-winning professor with 29 years of collegiate teaching experience, and a leading research mathematician in the field of singularities. The purpose of the Center is to promote and disseminate mathematical knowledge at all levels to help increase the knowledge of the community as a whole. Current activities include publishing affordable and interactive mathematics, science and statistics textbooks, hosting open educational videos, and supporting free online research publications and resources.

**XyAlgebra**

**Booth # 17**

XyAlgebra is a completely free Algebra I software package. Solutions can be entered step-by-step, not just as short final answers. XyAlgebra responds intelligently to each step by suggesting appropriate next steps for any solution method, flagging incorrect steps and reviewing appropriate prerequisite(s). Intelligent responses are even available at each step of verbal problems. XyAlgebra configuration options include initial placement, instruction, unlimited practice, periodic testing and distance learning. Please stop at Booth 17 for a demo.

# MAA MathFest 2012

## MAP OF MADISON



### CENTRAL MADISON Hotel and Restaurant Map

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**HOTEL KEY:**

- A** Hilton Madison
- B** Sheraton Madison
- C** Inn on the Park
- D** Smith Hall at UW
- E** Madison Concourse

**Restaurant Key:**

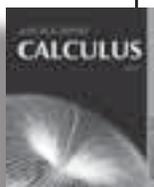
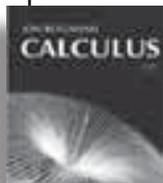
1. 43 North	10. Brickhouse BBQ	19. Dotty Dumping's Dowry	28. Jerome's Restaurant	37. Ocean Grill
2. Admiralty Room - The Edgewater Hotel	11. Brocach Irish Pub	20. Eldorado Grill	- BEST WESTERN PLUS Inn on the Park	38. The Old Fashioned Tavern & Restaurant
3. Aldo's Café	12. Café Samba	21. Essen Haus German Restaurant	29. Johnny DELMONICO'S	39. Paisan's
4. Ancora Coffee Roasters	13. Capital Tap Haus	22. Francesca's al Lago	30. L'Etoile Restaurant	40. Panera Bread Bakery & Cafe
5. Avenue Bar	14. Capitol ChopHouse	23. Fresco/Catering a Fresco	31. Marigold Kitchen	41. Porta Bella Restaurant
6. Badgerland Bar & Grill	15. Chocolate Shoppe Ice Cream Co.	24. Gino's	32. Merchant Madison	42. Restaurant Muramoto
7. Blue Marlin	16. Coliseum Bar & Banquet	25. Graze	33. Milio's Sandwiches - MLK Jr. Blvd.	43. Samba Brazilian Grill
8. Bluephies Downtown Deli	17. The Coopers Tavern	26. Great Dane Pub & Brewing Co.	34. Milio's Sandwiches - University Ave.	44. Sardine
9. The Brass Ring Bar & Restaurant	18. Dayton Street Grille	- Downtown	35. The Nitty Gritty	45. Steenbock's on Orchard
		27. Harvest	36. Nostrano Restaurant	46. Wonder Bar Steakhouse

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David S. Moore | George P. McCabe |  
 Bruce Craig

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**AT** STATISTICS  
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# MAA MathFest 2012

## THURSDAY, AUGUST 2, 2012

	7:00am	8:00am	9:00am	10:00am	11:00am	12:00pm	1:00pm
Registration	Registration (MathFest 2012 Registration is located at the Monona Terrace, Level 4, Registration Lobby)						
Exhibit Hall	Exhibit Hall / MAA Pavilion / Student Hospitality Center / Internet Café (Monona Terrace)						
Community Terrace							
Madison Ballroom AB	<b>MAA - AMS Joint Invited Address</b> The Synergy of Pure and Applied Math, of the Abstract and Concrete by David Mumford		<b>MAA Invited Address</b> Chaotic Stability, Stable Chaos by Amie Wilkinson		<b>Earle Raymond Hedrick Lecture #1</b> Tropical Mathematics by Bernd Sturmfels		
Ballroom A							<b>MAA Lecture for Students</b> Geometreks by Ivars Peterson
Ballroom B							
Ballroom C							
Ballroom D							
Hall of Ideas E							Open House
Hall of Ideas F							<b>Con</b> Instructional Support Resources
Hall of Ideas G							
Hall of Ideas H	<b>Contributed Paper Session</b> Incorporating Writing and Editing into Mathematics Classes, Session 1						
Hall of Ideas I							<b>Minicourse</b> Mathematics for Teachers
Hall of Ideas J							<b>Minicourse</b> WeBWorK Homework Problem Sets
Lecture Hall							<b>Panel Discussion</b> Effective Strategies for Teaching Mathematics to Non-Major Students
Meeting Room K	MAA Student Paper Session #1						
Meeting Room L	MAA Student Paper Session #2						
Meeting Room M	MAA Student Paper Session #3						
Meeting Room N	MAA Student Paper Session #4						
Meeting Room O	MAA Student Paper Session #5						
Meeting Room P	MAA Student Paper Session #6						
Meeting Room Q	<b>General Contributed Paper Session</b> Research in Graph Theory or Combinatorics						
Meeting Room R	<b>General Contributed Paper Session</b> Interdisciplinary Topics in Mathematics						<b>Graduate Student Workshop</b> What's the Story? A Graduate Workshop on Creating a Presentation for Undergraduate Students

2:00pm	3:00pm	4:00pm	5:00pm	6:00pm	7:00pm	8:00pm	9:00pm
Terrace, Level 1, Exhibit Hall B)			Graduate Student Reception				
Panel Session Contemporary Approaches to Intermediate Algebra		Panel Session SUMMA Session for Prospective REU Mentors					
Contributed Paper Session Undergraduate Research Activities in Mathematical and Computational Biology							
Invited Paper Session Combinatorics and Matrices							
Invited Paper Session Convex Algebraic Geometry							
Contributed Paper Session and Accessible Problems in Number Theory							
Contributed Paper Session Problems for Undergraduates in Mathematics and Statistics		SIGMAA RUME Workshop Supporting Students' Reinvention of Formal Limit Definitions					
Contributed Paper Session Math Circles: Best Practices							
Contributed Paper Session Integrating Writing and Editing into Mathematics Classes, Session 2							
Minicourse #1, Part 1 Problems for Business Decisions		Minicourse #5, Part 1 The Mathematics of Folding & Unfolding					
Minicourse #2, Part 1 Problems with Embedded Flash Applets		Minicourse #6, Part 1 A Game Theory Path to Quantitative Literacy					
Panel Discussion Teaching Classes for ...	Panel Discussion The Job Search I: How to Apply for Jobs - Lessons for Academia and Industry		Panel Discussion The Job Search II: Interviewing and Hiring for AcademicJobs - Lessons from Both Sides of the Trenches		Exclusive Screening of "Flatland": Sphereland" Followed by Documentary, "In the Footsteps of Newton"		
MAA Student Paper Session #7		MAA Student Paper Session #11					
MAA Student Paper Session #8		MAA Student Paper Session #12					
MAA Student Paper Session #9		MAA Student Paper Session #13					
MAA Student Paper Session #10		MAA Student Paper Session #14					
PME Student Paper Session #1		PME Student Paper Session #3					
PME Student Paper Session #2		PME Student Paper Session #4					
General Contributed Paper Session Teaching or Learning Introductory Mathematics							
Workshops Graduate Student ... a Research ... graduates	General Contributed Paper Session Mathematics and Technology						

# MAA MathFest 2012

## FRIDAY, AUGUST 3, 2012

	7:00am	8:00am	9:00am	10:00am	11:00am	12:00pm	1:00pm	
Registration	Registration (MathFest 2012 Registration is located at the Monona Terrace, Level 4, Registration Lobby)							
Exhibit Hall	Exhibit Hall / MAA Pavilion / Student Hospitality Center / Internet Café (Monona Terrace)							
Madison Ballroom AB		<b>MAA - AWM Etta Z. Falconer Lecture</b> Because I Love Mathematics: The Role of Disciplinary Grounding in Mathematics by Karen King	<b>Earle Raymond Hedrick Lecture #2</b> Convex Algebraic Geometry by Bernd Sturmfels	<b>James R. Leitzel Lecture</b> The Many Faces of Mentoring by Sylvia Bozeman	<b>MAA Prize Session</b>			
Community Terrace								
Ballroom A							<b>NAM David Blackwell Lecture</b> The Marriage Between Disease Dynamics and Mathematics: A History of Success by Carlos Castillo-Chavez	
Ballroom B							<b>MAA Undergraduate Student Activity</b> Entertaining Math: Juggling, Magic and Circus Tricks	
Ballroom C							<b>MAA Undergraduate Student Activity</b> Mathematical Intuition - Just How Far Astray Can Your Mathematical Common Sense Mislead You?	
Ballroom D							What Mathematics?	
Hall of Ideas E	<b>Contributed Paper Session</b> Open and Accessible Programs in Combinatorics and Graph Theory							<b>Contributed Paper Session</b> Recreational Mathematics: New Frontiers
Hall of Ideas F							<b>Contributed Paper Session</b> Engaging Undergraduate Mathematics	
Hall of Ideas G				<b>Contributed Paper Session</b> Inquiry-Based Learning Best Practices, Session 1				<b>Contributed Paper Session</b> The History of Mathematics and Learning Mathematics
Hall of Ideas H							<b>Contributed Paper Session</b> The History of Mathematics and Learning Mathematics	
Hall of Ideas I							<b>Minicourse #1</b> Mathematics for Business	
Hall of Ideas J							<b>Minicourse #2</b> WeBWorK Homework Problems	
Lecture Hall							<b>Panel Discussion</b> Designing Studies to Measure the Effectiveness of Online Homework	
Meeting Room K				<b>MAA Student Paper Session #15</b>				
Meeting Room L				<b>MAA Student Paper Session #16</b>				
Meeting Room M				<b>MAA Student Paper Session #17</b>				
Meeting Room N				<b>MAA Student Paper Session #18</b>				
Meeting Room O				<b>PI Mu Epsilon Student Paper Session # 5</b>				
Meeting Room P				<b>PI Mu Epsilon Student Paper Session #6</b>				
Meeting Room Q				<b>General Contributed Paper Session</b> History or Philosophy of Mathematics				
Meeting Room R				<b>General Contributed Paper Session</b> Modeling, Applications, Probability, or Statistics		<b>General Contributed Paper Session</b> Research		

2:00pm	3:00pm	4:00pm	5:00pm	6:00pm	7:00pm	8:00pm	9:00pm
Alders Conference, Level 1, Exhibit Hall B)							
Alder Awards Session		Proposal Writing Workshop for Grant Applications to the NSF Division of Undergraduate Education		Pi Mu Epsilon Student Banquet and Awards Ceremony		Pi Mu Epsilon J. Sutherland Frame Lecture The Chemistry of Primes by Melanie Matchett Wood	Ice Cream Social
Panel Session Mentoring Undergraduates on Research: A Kaleidoscope of Models		Panel Session An Update on the Mathematical Education of Teachers II Report					
Invited Paper Session Walk the Walk, Talk the Talk							
MAA - AMS Special Session Mathematicians Should Every Citizen Know - and How Does K-16 Get Us There?							
Paper Session Problems and New Solutions, Session 1		WEB SIGMAA Business Meeting, Reception, and Discussion					
Invited Paper Session Topics in Geometry Courses, Session 1		SIGMAA RUME Workshop Supporting Students' Reinvention of Formal Limit Definitions					
Contributed Paper Session Inquiry-Based Learning Best Practices, Session 2							
Paper Session and its Uses in Teaching and Mathematics		Philosophy of Mathematics: POM SIGMAA Reception and Guest Lecture Is the Proof in the Picture? Seeing, Believing, and Proving by Janet Folina					
Minicourse #1, Part 2 Business Decisions	Minicourse #3, Part 1 Mathemagic with a Deck of Cards						
Minicourse #2, Part 2 with Embedded Flash Applets	Minicourse #4, Part 1 Making Math Relevant: A Multidisciplinary Sustainability Module for Calculus						
Panel Discussion Effectiveness	Panel Discussion Issues for Early Career Mathematicians in Academia	Panel Discussion An Update on the Mathematical Education of Teachers II Report					
MAA Student Paper Session #19		MAA Student Paper Session #23					
MAA Student Paper Session #20		MAA Student Paper Session #24					
MAA Student Paper Session #21		MAA Student Paper Session #25					
MAA Student Paper Session #22		MAA Student Paper Session #26					
Pi Mu Epsilon Student Paper Session #7		Pi Mu Epsilon Student Paper Session #9					
Pi Mu Epsilon Student Paper Session #8		Pi Mu Epsilon Student Paper Session #10					
General Contributed Paper Session Teaching or Learning Calculus							
General Contributed Paper Session Research in Algebra, Topology, or Analysis							

# MAA MathFest 2012

## SATURDAY, AUGUST 4, 2012

	7:00am	8:00am	9:00am	10:00am	11:00am	12:00pm	1:00pm	
Registration		Registration (MathFest 2012 Registration is located at the Monona Terrace, Level 4, Registration Lobby)						
Exhibit Hall		Exhibit Hall/MAA Pavilion/Student Hospitality Center/Internet Café (Monona Terrace, Level 1, Exhibit Hall B)						
Madison Ballroom AB		MAA Invited Address Random Interfaces and Limit Shapes by Richard Kenyon	Earle Raymond Hedrick Lecture #3 The Central Curve in Linear Programming by Bernd Sturmfels	MAA Invited Address Putting Topology to Work by Robert Ghrist	MAA Business Meeting			
Ballroom A								
Ballroom B								
Ballroom C								
Ballroom D								
Hall of Ideas E			Math Circles Demonstration, Session 1		Math Circles Demonstration, Session 2		Contribu Assessment of Math-	
Hall of Ideas F			Mathematical Competition in Modeling Awards					
Hall of Ideas G			Contributed Paper Session Inquiry-Based Learning Best Practices, Session 3				Workshop - W	
Hall of Ideas H			Contributed Paper Session Recreational Mathematics: New Problems and New Solutions, Session 2				Student Probl	
Hall of Ideas I							The Ma	
Hall of Ideas J							A Game T	
Lecture Hall							Par How Will CCS and Col	
Meeting Room K								
Meetings Room L								
Meeting Room Q		General Contributed Paper Session Assessment, Mentoring, or Outreach						Gener Teaching a
Meeting Room R		General Contributed Paper Session Research in Applied Mathematics						Gener Research in

2:00pm      3:00pm      4:00pm      5:00pm      6:00pm      7:00pm      8:00pm

**Silver and Gold Reception and Banquet**  
Multiple Perspectives on Knowing and Teaching Mathematics

**Invited Paper Session**  
Mathematics and System Biology

**Invited Paper Session**  
Discrete Probability on Surfaces

**Invited Paper Session**  
Applied and Computational Topology

**Invited Paper Session**  
Of Courses for Students in  
-Intensive Majors

**Contributed Paper Session**  
Engaging Undergraduates in Geometry Courses, Session 2

**SIGMA TAHSM  
Business  
Meeting**

**Writing for MAA Journals**

**Problem Solving Competition**

**Math Wrangle**

**Minicourse #5, Part 2**  
Mathematics of Folding & Unfolding

**Minicourse #3, Part 2**  
Mathemagic with a Deck of Cards

**Minicourse #6, Part 2**  
Theory Path to Quantitative Literacy

**Minicourse #4, Part 2**  
Making Math Relevant: A Multidisciplinary Sustainability  
Module for Calculus

**Panel Discussion**  
SIGMA Influence High School  
College Mathematics?

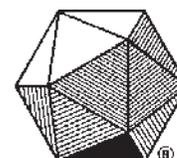
**Panel Session**  
CUPM "Birds of a Feather" Course Area  
Panel & Discussion: Mathematics Majors  
for 2015 and Beyond

**Great Talks for General Audience: Coached Presentations by Graduate Students**

**Great Talks for General Audience: Coached Presentations by Graduate Students**

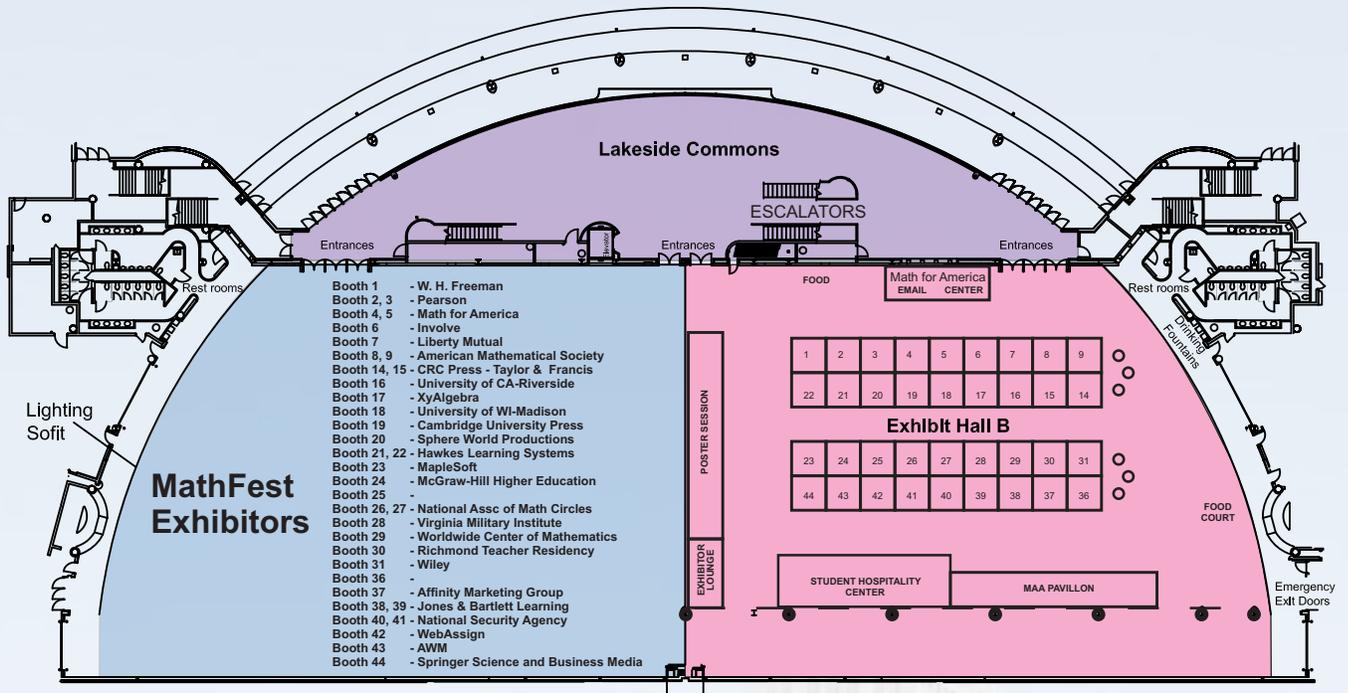
**General Contributed Paper Session**  
and Learning Advanced Mathematics

**General Contributed Paper Session**  
Number Theory, Geometry, or Linear  
Algebra

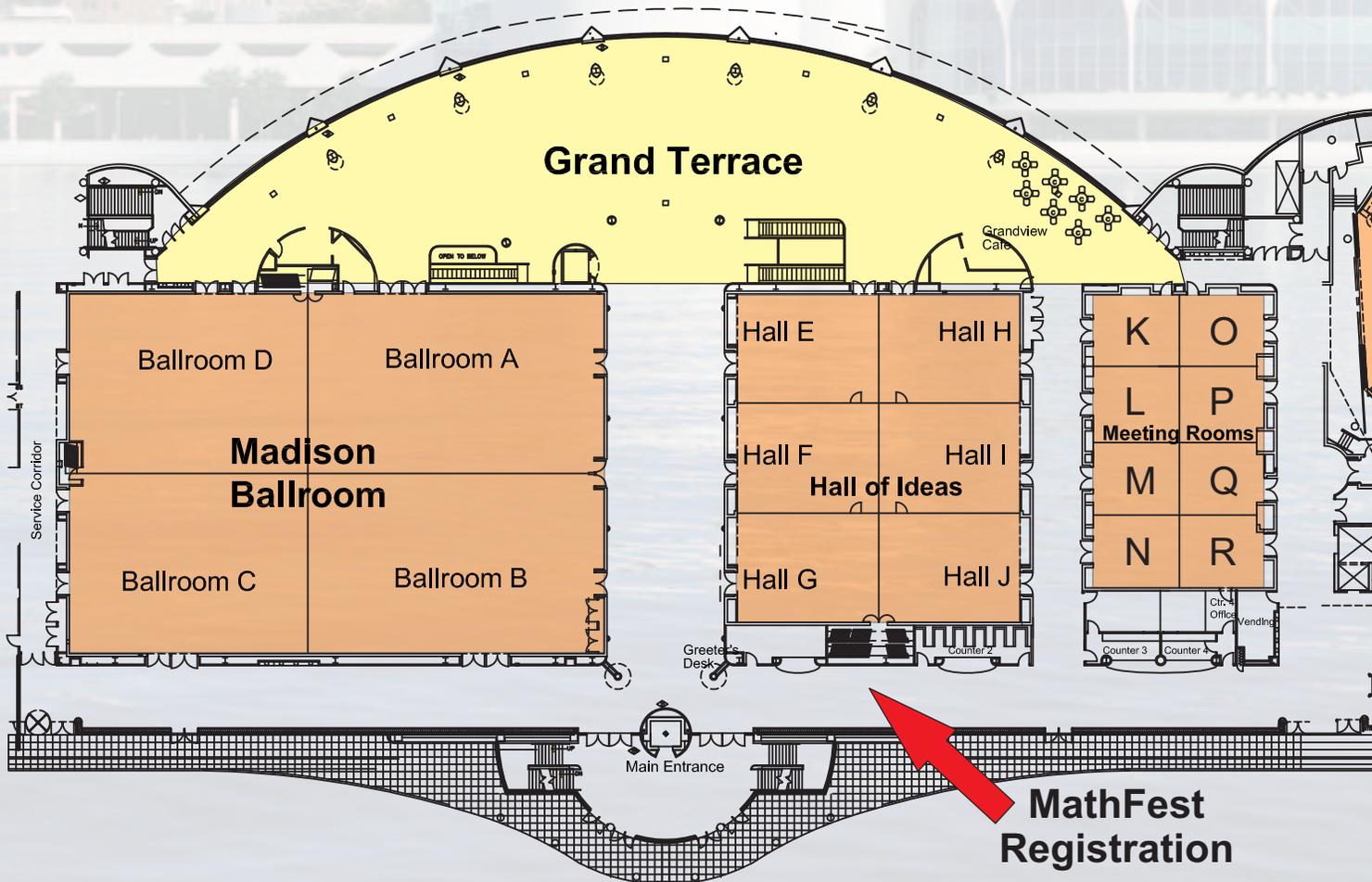


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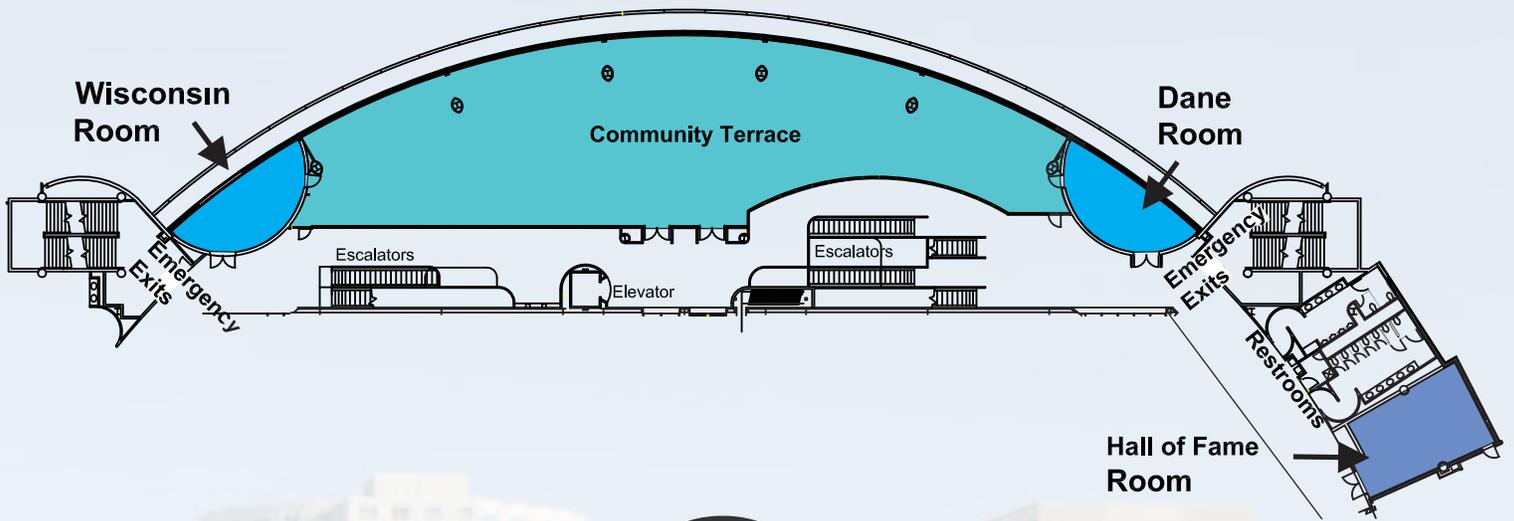
# Level One



# Level Four



# Level Two

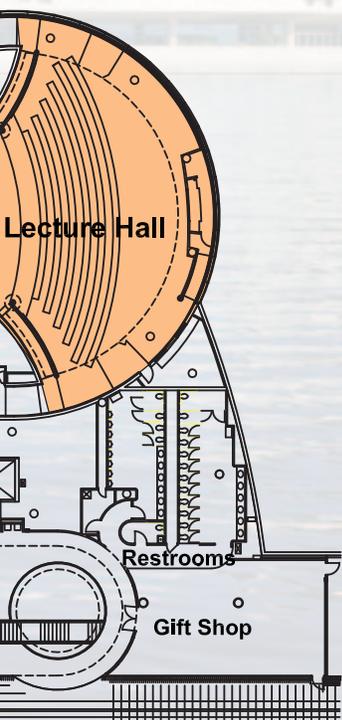


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# MAA Math Fest

August 2 - 4 2012

MADISON WISCONSIN

# MAA MathFest 2012 TIMETABLE

## WEDNESDAY, AUGUST 1, 2012

7:00 a.m. – 6:00 p.m., Monona Hall of Fame  
**WeBWork Workshop**

8:00 a.m. – 5:00 p.m., Sheraton Madison, Inspiration Ballroom  
**MAA Board of Governors**

8:00 a.m. – 7:00 p.m., Monona Terrace  
**Registration**

4:30 p.m. – 5:30 p.m., Hall of Ideas G and J  
**MAA – Pi Mu Epsilon Student Reception**

5:30 p.m. – 6:30 p.m., Hall of Ideas E  
**Face Off!**

Organizers: *Ken Price, University of Wisconsin – Oshkosh; Steve Szydluk, University of Wisconsin – Oshkosh*

6:00 p.m. – 7:30 p.m., Exhibit Hall  
**Opening Reception**

7:30 p.m. – 9:00 p.m., Grand Terrace  
**Opening Banquet, MAA: The Musical!**  
MC: *Paul Zorn, MAA President*

## THURSDAY, AUGUST 2, 2012

7:30 a.m. – 4:00 p.m., Monona Terrace  
**Registration**

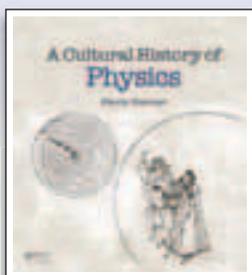
8:00 a.m. – 9:25 a.m., Meeting Room Q  
**General Contributed Paper Session  
Research in Graph Theory or Combinatorics**  
*David Housman, Goshen College; Nancy Ann Neudauer, Pacific University*

8:00 a.m. – 8:10 a.m.  
**Counting Matchings Using Integrals:  
A Discrete-Continuous Symbiosis**  
*Mary Kayll, University of Montana*

8:15 a.m. – 8:25 a.m.  
**On the Sandpile Group of Generalized Book Graphs**  
*Luis David Molina, Sam Houston State University;  
Luis Garcia-Puente, Sam Houston State University*

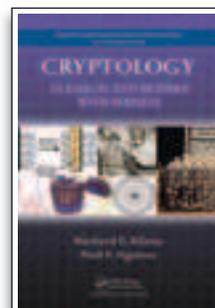
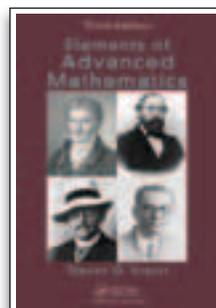
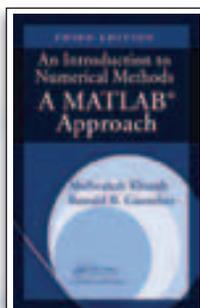
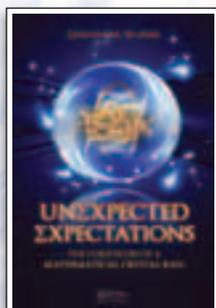
8:30 a.m. – 8:40 a.m.  
**Prisoners and Guards on Rectangular Boards**  
*Grady Bullington, University of Wisconsin – Oshkosh; Linda Eroh,  
University of Wisconsin – Oshkosh; Steven Winters, University of  
Wisconsin – Oshkosh*

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8:45 a.m. – 8:55 a.m.

**Sums of Squares, the Octonions, and (7, 3, 1)**

*Ezra Brown, Virginia Tech*

9:00 a.m. – 9:10 a.m.

**Techniques for Finding Lower Bounds of Radio Number of Graphs**

*Katherine Benson, University of Iowa*

9:15 a.m. – 9:25 a.m.

**What Makes That Matrix Regular?**

*Jillian McLeod, U.S. Coast Guard Academy*

8:00 a.m. – 10:10 a.m., Meeting Room R

**General Contributed Paper Session  
Interdisciplinary Topics in Mathematics**

*David Housman, Goshen College; Nancy Ann Neudauer, Pacific University*

8:00 a.m. – 8:10 a.m.

**Regional University vs. Community College: Just How Different ARE They?**

*Linda Braddy, Tarrant County College*

8:15 a.m. – 8:25 a.m.

**Collaboration Energy**

*Cynthia L. McCabe, University of Wisconsin-Stevens Point*

8:30 a.m. – 8:40 a.m.

**Mathematics and Psychology:  
A Linked Learning Community**

*Mike Pinter, Belmont University*

8:45 a.m. – 8:55 a.m.

**The Flat Earth: The Mathematics of Mapmaking**

*Jeff Johannes, SUNY Geneseo*

9:00 a.m. – 9:10 a.m.

**Research Methods - A Transitional Course**

*Kevin A. Roper, Cedarville University*

9:15 a.m. – 9:25 a.m.

**Voting Methods for Political Elections:  
Propaganda, Experiments and What  
U.S. Voters Want from an Election Algorithm**

*Kathryn Elizabeth Lenz, University of Minnesota Duluth*

9:30 a.m. – 9:45 a.m.

**Introducing Non-Euclidean Geometries at the  
Public School Levels; The OTP Project**

*Nicole Breckling, Austin College; Jack Mealy, Austin College*

9:45 a.m. – 9:55 a.m.

**Energized Integer Partitions**

*Todd Iverson, Saint Mary's University of Minnesota;  
Roger Kugel, Saint Mary's University of Minnesota;  
Paul Weiner, Saint Mary's University of Minnesota*

10:00 a.m. – 10:10 a.m.

**A Natural Truth about the Natural Numbers  
Unprovable in Peano Arithmetic**

*Andy Martin, Kentucky State University*

8:00 a.m. – 11:30 a.m., Hall of Ideas E

**Pi Mu Epsilon Council**

8:30 a.m. – 9:20 a.m., Ballroom AB

**MAA-AMS Joint Invited Address**

**The Synergy of Pure and Applied Math, of the Abstract and Concrete**

*David Mumford, Brown University*

8:30 a.m. – 10:25 a.m., Meeting Room K

**MAA Student Paper Session #1**

8:30 a.m. – 10:25 a.m., Meeting Room L

**MAA Student Paper Session #2**

8:30 a.m. – 10:25 a.m., Meeting Room M

**MAA Student Paper Session #3**

8:30 a.m. – 10:25 a.m., Meeting Room N

**MAA Student Paper Session #4**

8:30 a.m. – 10:25 a.m., Meeting Room O

**MAA Student Paper Session #5**

8:30 a.m. – 10:25 a.m., Meeting Room P

**MAA Student Paper Session #6**

9:00 a.m. – 5:00 p.m., Monona Terrace

**Exhibit Hall**

9:00 a.m. – 5:00 p.m., Exhibit Hall

**Student Hospitality Center**

9:30 a.m. – 10:20 a.m., Ballroom AB

**MAA Invited Address**

**Chaotic Stability, Stable Chaos**

*Amie Wilkinson, Northwestern University*

10:30 a.m. – 11:20 a.m., Ballroom AB

**Invited Address**

**Earle Raymond Hedrick Lecture #1: Tropical Mathematics**

*Bernd Sturmfels, University of California, Berkeley*

10:40 a.m. – 11:55 a.m., Hall of Ideas H

**Contributed Paper Session**

**Incorporating Writing and Editing into  
Mathematics Classes, Session 1**

*Martin William Montgomery, Sam Houston State University;  
Ryan Stufelbeam, Transylvania University*

10:40 a.m. – 10:55 a.m.

**Developing Writing Skills in an Introduction to Proofs Course**

*Ted Sundstrom, Grand Valley State University*

11:00 a.m. – 11:15 a.m.

**Editing in a Proof-Based Course**

*Emily Ronshausen, UC Santa Cruz*

11:20 a.m. – 11:35 a.m.

**Writing Mathematics Well**

*Kevin A. Roper, Cedarville University*

# MAA MathFest 2012

## TIMETABLE

11:40 a.m. – 11:55 a.m.

### **Mat-Rix-Toe: Strategy and Writing in Linear Algebra**

*Adam Graham-Squire, High Point University*

1:00 p.m. – 1:50 p.m., Ballroom A

### **MAA Lecture for Students**

#### **Geometreks**

*Ivars Peterson, Mathematical Association of America*

1:00 p.m. – 2:20 p.m., Meeting Room R

### **Graduate Student Workshop**

#### **What's the Story? A Graduate Student Workshop on Creating Research Presentations for a General Audience**

*Organizer: Rachel Schwell, Central Connecticut State University*

*Sponsors: Committee on Graduate Students; Young*

*Mathematicians Network*

1:00 p.m. – 2:20 p.m., Lecture Hall

### **Panel Session**

#### **Parenthood on the Tenure Track**

*Organizers: Jacqueline Jensen, Slippery Rock University;*

*Magnhild Lien, California State University Northridge; and*

*Maura Mast, University of Massachusetts Boston*

*Panelists: Deanna Haunsperger, Carleton College;*

*Melanie Matchett Wood, University of Wisconsin Madison;*

*Judy Walker, University of Nebraska-Lincoln*

*Sponsor: Association for Women in Mathematics*

1:00 p.m. – 3:00 p.m., Hall of Ideas I

### **Minicourse #1, Part 1**

#### **Mathematics for Business Decisions**

*Presenter: Marilou Mendel*

1:00 p.m. – 3:00 p.m., Hall of Ideas J

### **Minicourse #2, Part 1**

#### **WeBWorK Homework Problems with**

#### **Embedded Flash Applets**

*Presenters: Barbara Margolius, Cleveland State University; Dan Gries,*

*The Hopkins School; Felipe Martins, Cleveland State University*

1:00 p.m. – 3:35 p.m., Hall of Ideas F

### **Contributed Paper Session**

#### **Instructional Support Roles for Undergraduates in Mathematics and Statistics**

*Feryal Alayont, Grand Valley State University; Ksenija*

*Simic-Muller, Pacific Lutheran University*

1:00 p.m. – 1:15 p.m.

#### **Undergraduate TAs as the Holy Grail: Work Savings, Educational Benefits, & Program Development**

*David Kung, St. Mary's College of Maryland*

1:20 p.m. – 1:35 p.m.

#### **The Case of Ann: Our First Undergraduate Mathematics Teaching Assistant (& Now Math Major!)**

*Jessica M. Deshler, West Virginia University*

1:40 p.m. – 1:55 p.m.

#### **The ACE Program: Improving Retention in the STEM Majors**

*Emily Ronshausen, UC Santa Cruz*

2:00 p.m. – 2:15 p.m.

#### **Supplement to Instruction Program in Mathematics and Statistics at Winona State University**

*Joyati Debnath, Winona State University*

2:20 p.m. – 2:35 p.m.

#### **Supplemental Instruction in Undergraduate Mathematics Classes at Saint Leo University**

*Monika Kiss, Saint Leo University*

2:40 p.m. – 2:55 p.m.

#### **Two Forms of Peer-Tutoring in First-Year Engineering Calculus**

*Amanda Hattaway, Wentworth Institute of Technology;*

*Anita Penta, Wentworth Institute of Technology; Emma Smith*

*Zbarsky, Wentworth Institute of Technology*

3:00 p.m. – 3:15 p.m.

#### **Peer-Led Team Learning in Precalculus**

*Helmut Knaust, UTEP*

3:20 p.m. – 3:35 p.m.

#### **Is It a Good Idea to Give Undergraduate Teaching Assistants More Responsibilities in Statistics Courses?**

*Fariha Nowrouzi Kashan, Kentucky State University*

1:00 p.m. – 3:50 p.m., Ballroom C

### **Invited Paper Session**

#### **Combinatorics and Matrices**

*Richard A. Brualdi, University of Wisconsin – Madison*

1:00 p.m. – 1:20 p.m.

#### **Tournaments and Their Matrices**

*T.S. Michael, U.S. Naval Academy*

1:30 p.m. – 1:50 p.m.

#### **Providing a Link Between Posets, Topology, and Enumeration**

*Bridget Tenner, DePaul University*

2:00 p.m. – 2:20 p.m.

#### **Linear Recurrences and the Pfaffian Transform**

*Eric Egge, Carleton College*

2:30 p.m. – 2:50 p.m.

#### **Minimal 2-Matching Covered Loopy Graphs**

*Adam Berliner, St. Olaf College*

3:00 p.m. – 3:20 p.m.

#### **Application of PageRank Centrality to a Survey Instrument**

*In-Jae Kim, University of Minnesota – Mankato*

3:20 p.m. – 3:50 p.m.

#### **Parameters Related to Maximum Nullity, Zero Forcing Number, and Tree-Width of a Graph**

*Leslie Hogben, Iowa State University*

1:00 p.m. – 4:15 p.m., Hall of Ideas E

### **Contributed Paper Session**

#### **Open and Accessible Problems in Number Theory**

*Aliza Steurer, Dominican University; Thomas Hagedorn,*

*The College of New Jersey*

1:00 p.m. – 1:15 p.m.

**Senior Seminar Using Unsolved Problems in Number Theory**

Robert Styer, Villanova University

1:20 p.m. – 1:35 p.m.

**Variations on a Theme of DLP**

Joshua Holden, Rose-Hulman Institute of Technology

1:40 p.m. – 1:55 p.m.

**Power Fibonacci Sequences**

Marc Renault, Shippensburg University; Joshua Ide, Shippensburg University

2:00 p.m. – 2:15 p.m.

**The Best of Both Worlds: Linear Diophantine Equations and Solutions of a Certain Size**

Ryan Stufflebeam, Transylvania University

2:20 p.m. – 2:35 p.m.

**Has an Upper Bound for Brun's Constant Been Found?**

Andy Martin, Kentucky State University

2:40 p.m. – 2:55 p.m.

**Integer Sequences, Growth Functions, and Growth Limits: Measuring Divergence via Multiplication**

Michael Brilleslyper, U.S. Air Force Academy; Bradley Warner, U.S. Air Force Academy

3:00 p.m. – 3:15 p.m.

**Local Fields with Dihedral Galois Group**

Chad Awtrey, Elon University

3:20 p.m. – 3:35 p.m.

**Open Problems on Lerch Primes and Wieferich-Non-Wilson Primes**

Jonathan Sondow, New York City

3:40 p.m. – 3:55 p.m.

**Pseudo-Arithmetic Super Sets in the Integers, Gaussian Integers, and Eisenstein Integers**

Peter Floodstrand Blanchard, St. Olaf College and University of Iowa

4:00 p.m. – 4:15 p.m.

**Enjoying the Diversity of Number Theory Research As An Undergrad**

Brian S. Chen

1:00 p.m. – 4:15 p.m., Hall of Ideas G

**Contributed Paper Session  
Math Circles: Best Practices**

Sam Vandervelde, St. Lawrence University; Tatiana Shubin, San Jose State University; James Tanton, St. Mark's Institute of Mathematics

1:00 p.m. – 1:15 p.m.

**Dyadic Fractions, Permutations and Paper Folding**

James Tanton, St. Mark's Institute of Mathematics

1:20 p.m. – 1:35 p.m.

**SEE-Math: Six String Probability Activity**

Phillip B Yasskin, Texas A&M University; David J Manuel, Texas A&M University

1:40 p.m. – 1:55 p.m.

**Bringing Math Circle Ideas Into Classrooms**

Amanda Serenevy, Riverbend Community Math Center

2:00 p.m. – 2:15 p.m.

**Little Wranglers**

Edward Keppelmann, University of Nevada Reno

2:20 p.m. – 2:35 p.m.

**Path Counting for Math Circles**

Sam Vandervelde, St. Lawrence University

2:40 p.m. – 2:55 p.m.

**The Whats and Whys of the AMS MSRI Mathematical Circles Library**

Tatiana Shubin, San Jose State University

3:00 p.m. – 3:15 p.m.

**South Carolina High Energy Mathematics Teachers' Circle (SCHEMaTC): Year 0**

Debra Geddings, University of South Carolina; George McNulty, University of South Carolina; Nieves McNulty, Columbia College; Douglas B. Meade, University of South Carolina

3:20 p.m. – 3:35 p.m.

**Collaboration is the Key**

Melissa Shepard Loe, University of St. Thomas; Brenda Kay Kroschel, University of St. Thomas

3:40 p.m. – 3:55 p.m.

**San Francisco Math Circle: Evaluation of Changes in Mathematical Attitude, First Report**

Brandy Sue Wieggers, MSRI, San Francisco State

4:00 p.m. – 4:15 p.m.

**Research Results – An Update**

Diana White, University of Colorado Denver

1:00 p.m. – 4:35 p.m., Hall of Ideas H

**Contributed Paper Session**

**Incorporating Writing and Editing into Mathematics Classes, Session 2**

Martin William Montgomery, Sam Houston State University; Ryan Stufflebeam, Transylvania University

1:00 p.m. – 1:15 p.m.

**Multimodal Interim Instructor Feedback Mechanisms to Improve Student Writing for a Calculus Project**

Brian Lunday, United States Military Academy; Jeremy Riehl, United States Military Academy; Victor Trujillo, United States Military Academy

1:20 p.m. – 1:35 p.m.

**Writing and Rewriting Concept Summaries in a First-Semester Calculus Course**

Chad Awtrey, Elon University

# MAA MathFest 2012

## TIMETABLE

1:40 p.m. – 1:55 p.m.

### **A Feedback Cycle on Papers in a History of Math Class**

*Diana White, University of Colorado Denver*

2:00 p.m. – 2:15 p.m.

### **A “Writing-Intensive” Real Analysis Course**

*Bonnie Gold, Monmouth University*

2:20 p.m. – 2:35 p.m.

### **Wiki Use for Writing and Editing in Mathematics Classes**

*William Cherowitzo, University of Colorado Denver*

2:40 p.m. – 2:55 p.m.

### **Collaborative Writing and Revision: Students Creating a Reference Textbook**

*Brian Katz, Augustana College; Elizabeth Thoren, University of California Santa Barbara*

3:00 p.m. – 3:15 p.m.

### **Mathematics Writing, Collaboration, and Peer Review using GoogleDocs**

*Carrie Diaz Eaton, Unity College; Stephanie Wade, Unity College*

3:20 p.m. – 3:35 p.m.

### **Magazine, Chapter and More: Diverse Writing and Editing Projects**

*Jeff Johannes, SUNY Geneseo*

3:40 p.m. – 3:55 p.m.

### **Mathematical Modeling is not Matlab: Teaching Students to Communicate**

*Jean Marie Linhart, Texas A&M University Department of Mathematics*

4:00 p.m. – 4:15 p.m.

### **Why Do I Need to Write in Biostatistics?**

*Magdalena Luca, Massachusetts College of Pharmacy and Health Sciences*

4:20 p.m. – 4:35 p.m.

### **Writing Mathematics: Investigations in Statistics and Differential Equations**

*Emma Smith Zbarsky, Wentworth Institute of Technology*

1:00 p.m. – 4:40 p.m., Meeting Room Q

### **General Contributed Paper Session**

#### **Teaching or Learning Introductory Mathematics**

*David Housman, Goshen College; Nancy Ann Neudauer, Pacific University*

1:00 p.m. – 1:10 p.m.

### **Models of Teaching and Learning in Mathematics**

*David Easdown, School of Mathematics and Statistics, University of Sydney*

1:15 p.m. – 1:25 p.m.

### **Fraction Addition for Remediation of Arithmetic and Preview of Algebra**

*J. Bradford Burkman, Louisiana School for Math, Science, and the Arts*

1:30 p.m. – 1:40 p.m.

### **Naive Invented Algorithms**

*John Beam, University of Wisconsin Oshkosh; Eric Kuennen, University of Wisconsin Oshkosh*

1:45 p.m. – 1:55 p.m.

### **Reconceiving Developmental Mathematics: Embracing the Diversity of Students’ Mathematical Knowledge**

*Steven Greenstein, University of the Virgin Islands*

2:00 p.m. – 2:10 p.m.

### **A Second Chance for Algebra Success (At No Extra Charge)**

*Curtis Card, Black Hills State University; Daluss J Siewert, Black Hills State University*

2:15 p.m. – 2:25 p.m.

### **Multi-Tiered Systems of Support in Developmental Math**

*Daluss J Siewert, Black Hills State University; Curtis Card, Black Hills State University*

2:30 p.m. – 2:40 p.m.

### **How Can We Make Mathematics Accessible to Remedial Mathematics Students?**

*Kristel Ehrhardt, Black Hills State University*

2:45 p.m. – 2:55 p.m.

### **Using a Digital Pen to Enhance Student Learning**

*Matthew Rissler, Loras College*

3:00 p.m. – 3:10 p.m.

### **Math Bucks Can Mean Money in the Bank for Remedial Math Students**

*Holly Gail Stillson, Black Hills State University*

3:15 p.m. – 3:25 p.m.

### **The Final Exam Problem Contest: An Opportunity for Making Connections and Personalizing Mathematics**

*Sarah L. Mabrouk, Framingham State University*

3:30 p.m. – 3:40 p.m.

### **Using Wolfram|Alpha to Accommodate Students with Math-Related Learning Disabilities**

*Maggie May, University of Wisconsin - Fond du Lac*

3:45 p.m. – 3:55 p.m.

### **A First Look at How Mathematicians Read Mathematics for Understanding**

*Mary Shepherd, Northwest Missouri State University*

4:00 p.m. – 4:10 p.m.

### **Analyzing Current Economic Growth, Income and Employment in an Introductory Statistics Course**

*Alexander G. Atwood, Suffolk County Community College*

4:15 p.m. – 4:25 p.m.

### **Strictly Platonic: Teaching Mathematics through Sculpture**

*Steven B. Zides, Wofford College*

4:30 p.m. – 4:40 p.m.

**Bridge to Engineering (B2E)- The First Step: Intermediate Algebra to Calculus Ready**

Brandy Sue Wiegers, MSRI, San Francisco State; Addie Evans, San Francisco State; Emiliano Gomez, UC Berkeley, San Francisco State

1:00 p.m. – 5:15 p.m., Ballroom D

**Invited Paper Session**

**Convex Algebraic Geometry**

Bernd Sturmfels, University of California Berkeley; Cynthia Vinzant, University of Michigan

1:00 p.m. – 1:30 p.m.

**Why is Sorting Easy but the Traveling Salesman Hard?**

Jordan Ellenberg, University of Wisconsin

1:45 p.m. – 2:15 p.m.

**Gradient Descent Homotopies and Real Solving**

Jon Hauenstein, North Carolina State University

2:30 p.m. – 3:00 p.m.

**Nonnegative Polynomials and the Sums of Squares**

Greg Blekherman, Georgia Tech

3:15 p.m. – 3:45 p.m.

**Certificates of Positivity: Theory and Practice**

Vicki Powers, Emory University

4:00 p.m. – 4:30 p.m.

**Joint Spectral Radius and Path-Complete Graph Lyapunov Functions**

Amir Ali Ahmadi, Massachusetts Institute of Technology

4:45 p.m. – 5:15 p.m.

**Klein's Idea and Identities for Powers of Polynomials**

Bruce Reznick, University of Illinois at Urbana-Champaign

1:00 p.m. – 5:15 p.m., Ballroom B

**Contributed Paper Session**

**Undergraduate Research Activities in Mathematical and Computational Biology**

Timothy Comar, Benedictine University

1:00 p.m. – 1:15 p.m.

**Combining Forces: Math and Bio Students Join to Study H1N1**

Meredith L Greer, Bates College

1:20 p.m. – 1:35 p.m.

**H1N1 and Dictyostelium Discoideum: Projects in Math Bio**

Matthew Rissler, Loras College; Erinn Sanstead, University of Minnesota; Sam Lampe, Loras College

1:40 p.m. – 1:55 p.m.

**Developing Student Understanding of Species Invasions and Disease Transmission at the Interface Between Mathematics and Biology**

James Peirce, University of Wisconsin - La Crosse; Greg Sandland, University of Wisconsin - La Crosse; Barbara Bennie, University of Wisconsin - La Crosse; Roger Haro, University of Wisconsin - La Crosse

2:00 p.m. – 2:15 p.m.

**Bottom-Up Approach to Mathematical Modeling in Ecology and Epidemiology**

Namyong Lee, Minnesota State University, Mankato

2:20 p.m. – 2:35 p.m.

**Zombies, Ecology, and Epidemiology...Oh My!**

Robert Allen, University of Wisconsin-La Crosse

2:40 p.m. – 2:55 p.m.

**Infusing the Flavor of Mathematical Biology Research into the Undergraduate Experience**

Talitha M. Washington, Howard University

3:00 p.m. – 3:15 p.m.

**Internationalizing the Mathematics Major with the Calculus of Sustainability**

John Zobitz, Augsburg College; Tracy Bibelnieks, Augsburg College

3:20 p.m. – 3:35 p.m.

**Multiple Mathematical Models**

Thomas Q. Sibley, St. John's University

3:40 p.m. – 3:55 p.m.

**Student Research Projects with Biological Models Using Impulsive Differential Equations**

Timothy Comar, Benedictine University

4:00 p.m. – 4:15 p.m.

**The Other Half of the Genome: Projects in Retroviral and Transposable DNA**

Marshall Hampton, University of Minnesota Duluth

4:20 p.m. – 4:35 p.m.

**Undergraduate Research in Gene Regulation Networks**

Dan Hrozencik, Chicago State University; Timothy Comar, Benedictine University

4:40 p.m. – 4:55 p.m.

**Analysis and Simulation Of Bacterial Pollution on an Urban Beach at Lake Michigan**

Istvan Lauko, University of Wisconsin, Milwaukee; Gabriella Pinter, University of Wisconsin, Milwaukee; Sandra McLellan, University of Wisconsin, Milwaukee

5:00 p.m. – 5:15 p.m.

**Mathematical Models of Glassy-Winged Sharpshooter Population Dynamics in Texas Vineyards**

Jeong-Mi Yoon, University of Houston-Downtown; Volodymyr Hryniv, University of Houston-Downtown; Lisa Morano, University of Houston-Downtown; Anh Tuan Nguyen, University of Houston-Downtown; Sara Wilder, University of Houston-Downtown

2:00 p.m. – 3:55 p.m., Meeting Room K

**MAA Student Paper Session #7**

2:00 p.m. – 3:55 p.m., Meeting Room L

**MAA Student Paper Session #8**

2:00 p.m. – 3:55 p.m., Meeting Room M

**MAA Student Paper Session #9**

# MAA MathFest 2012

## TIMETABLE

2:00 p.m. – 3:55 p.m., Meeting Room N

### **MAA Student Paper Session #10**

2:00 p.m. – 3:55 p.m., Meeting Room O

### **Pi Mu Epsilon Student Paper Session #1**

2:00 p.m. – 3:55 p.m., Meeting Room P

### **Pi Mu Epsilon Student Paper Session #2**

2:30 p.m. – 4:25 p.m., Meeting Room R

### **General Contributed Paper Session**

#### **Mathematics and Technology**

*David Housman, Goshen College; (Session Organizer)*

*Nancy Ann Neudauer, Pacific University*

2:30 p.m. – 2:40 p.m.

#### **Beamer, TikZ Graphics, and Flash Applets in the Classroom**

*Anders Hendrickson, Concordia College*

2:45 p.m. – 2:55 p.m.

#### **Making WeBWork Care About Algebra**

*Alexander Basyrov, University of Wisconsin - Stout*

3:00 p.m. – 3:10 p.m.

#### **Facilitating Student Mathematical Input on Mobile Devices**

*Philip B. Yasskin, Texas A&M University; Douglas B.*

*Meade, University of South Carolina; Matthew Barry, Texas A&M University*

3:15 p.m. – 3:25 p.m.

#### **Using iPads to Transform Learning Spaces**

*Timothy Lucas, Pepperdine University; Brian Fisher, Pepperdine University*

3:30 p.m. – 3:40 p.m.

#### **Professional Developmental Training for Urban School Teachers in Mathematics, IT and Engineering in Homeland Security**

*Cecelia Wright Brown, D.Eng., University of Baltimore;*

*Gargi Bhattacharyya, University of Baltimore; Kevin A Peters, Morgan State University*

3:45 p.m. – 3:55 p.m.

#### **Implementing an Introductory Mathematical Software Course**

*Michael Karls, Ball State University*

4:00 p.m. – 4:10 p.m.

#### **Getting Ready for College Mathematics**

*Dora Ahmadi, Morehead State University*

4:15 p.m. – 4:25 p.m.

#### **Visualization Projects for a Differential Equations Course**

*Jason Moliterno, Sacred Heart University*

2:35 p.m. – 3:55 p.m., Ballroom A

### **Panel Session**

#### **Contemporary Approaches to Intermediate Algebra**

*Organizers: Barbara Edwards, Oregon State University;*

*Sarah L. Mabrouk, Framington State University.*

*Panelists: Don Small, US Military Academy; Suzanne Doree,*

*Augsburg College; Ann Sitomer, Portland Community College*

*Sponsor: Curriculum Renewal Across the First Two Years (CRAFTY)*

2:35 p.m. – 3:55 p.m., Lecture Hall

### **Panel Session**

#### **The Job Search I: How to Apply for Jobs – Lessons for Academia and Industry**

*Organizer: Estela Gavosto, University of Kansas*

*Panelists: James Freeman, Cornell College; Will Hickman, Epic*

*Systems Corporation; Joanne Peebles, El Paso Community College;*

*Kimberly Roth, Juniata College; Erika Ward, Jacksonville University*

*Sponsor: Committee on Graduate Students*

3:00 p.m. – 5:00 p.m., Sheraton, Inspiration Ballroom

### **Section Officers Meeting**

3:30 p.m. – 5:30 p.m., Hall of Ideas I

#### **Minicourse #5, Part 1**

#### **The Mathematics of Folding & Unfolding**

*Presenter: Joseph O'Rourke, Smith College*

3:30 p.m. – 5:30 p.m., Hall of Ideas J

#### **Minicourse #6, Part 1**

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

*Presenter: David Housman, Goshen College*

4:00 p.m. – 6:15 p.m., Meeting Room K

### **MAA Student Paper Session #11**

4:00 p.m. – 6:15 p.m., Meeting Room L

### **MAA Student Paper Session #12**

4:00 p.m. – 6:15 p.m., Meeting Room M

### **MAA Student Paper Session #13**

4:00 p.m. – 6:15 p.m., Meeting Room N

### **MAA Student Paper Session #14**

4:00 p.m. – 6:15 p.m., Meeting Room O

### **Pi Mu Epsilon Student Paper Session #3**

4:00 p.m. – 6:15 p.m., Meeting Room P

### **Pi Mu Epsilon Student Paper Session #4**

4:10 p.m. – 5:30 p.m., Ballroom A

### **Panel Session**

#### **SUMMA Session for Prospective REU Mentors**

*Organizers: William Hawkins, Jr., MAA and University of the District*

*of Columbia; Robert Megginson, University of Michigan*

*Panelists: TBD*

4:10 p.m. – 5:30 p.m., Lecture Hall

### Panel Session

#### The Job Search II: Interviewing and Hiring for Academic Jobs – Lessons from Both Sides of the Trenches

Organizer: Jenna Carpenter, Louisiana Tech University  
 Panelists: Gulden Karakok, University of Northern Colorado;  
 John Travis, Mississippi College; Jessica Mikhaylov, United States Military Academy; Louis Deaett, Quinnipiac University; Michael Stob, Calvin College  
 Sponsor: Professional Development Committee

4:10 p.m. – 5:30 p.m., Hall of Ideas F

### RUME Workshop

5:00 p.m. – 6:00 p.m., Community Terrace at Monona Terrace

### Graduate Student Reception

Organizers: Estela A. Gavosto, University of Kansas;  
 James Freeman, Cornell College

5:30 p.m. – 7:00 p.m., Meeting Room Q

### Hawkes Learning

7:30 p.m. – 9:30 p.m., Lecture Hall

### Exclusive screening of “Flatland<sup>2</sup>: Sphereland” followed by documentary, “In the Footsteps of Newton”

## FRIDAY, AUGUST 3, 2012

7:30 a.m. – 4:00 p.m., Monoca Terrace

### Registration

8:00 a.m. – 8:25 a.m., Ballroom AB

### MAA-AWM Morning Coffee

8:00 a.m. – 10:10 a.m., Meeting Room R

### General Contributed Paper Session

#### Modeling, Applications, Probability, or Statistics

David Housman, Goshen College; Nancy Ann Neudauer, Pacific University

8:00 a.m. – 8:10 a.m.

#### A Mathematical Model of Classical Cross Country Skiing

Kenneth Driessel, Iowa State University

8:15 a.m. – 8:25 a.m.

#### Assessing the Chaotic Nature of Interstellar Magnetic Fields

Lisa Holden, Northern Kentucky University

8:30 a.m. – 8:40 a.m.

#### Basic Search Pattern Algorithms for Search and Rescue Operations

Jack Ryder, Kean University

8:45 a.m. – 8:55 a.m.

#### Hollow Fiber Dialyzer: Blood and Bicarbonated Dialysate Flow Characteristics

Kodwo Annan, Minot State University

9:00 a.m. – 9:10 a.m.

#### Modeling the Effect of Diversity in Host Plant-Herbivore-Predator Interactions

Mohammed Yahdi, Ursinus College

9:15 a.m. – 9:25 a.m.

#### The Feasibility of Electric Vehicles: Driving Interest in Mathematical Modeling

William Schellhorn, Simpson College

9:30 a.m. – 9:40 a.m.

#### Valid Range an Object’s Unified Kinetic Quantity

Audey Shen, Henry M. Gunn High School

9:45 a.m. – 9:55 a.m.

#### Explaining Statistical Independence via the Approach of Determinant

Munir Mahmood, Gulf University for Science and Technology

10:00 a.m. – 10:10 a.m.

#### Preparing Prospective Teachers to Implement the Common Core State Standards for Statistics and Probability

Randall Groth, Salisbury University

8:00 a.m. – 10:25 a.m., Meeting Room Q

### General Contributed Paper Session

#### History or Philosophy of Mathematics

David Housman, Goshen College; Nancy Ann Neudauer, Pacific University

8:00 a.m. – 8:10 a.m.

#### Evangelista Torricelli’s Quadratura Parabolae

Andrew Leahy, Knox College; Kasandara Sullivan, Knox College

8:15 a.m. – 8:25 a.m.

#### The Catenary Problem in Christian Huygens’s Notebook G

John F. Bukowski, Juniata College

8:30 a.m. – 8:40 a.m.

#### Poisson’s Careful Handling of Transcendental Function, Criticizing Diversion from Real to Imaginary in Definite Integral

Shigeru Masuda, Research Institutes of Mathematical Sciences, Kyoto University

8:45 a.m. – 8:55 a.m.

#### Copperhead, Mamba, and JN-25

Chris Christensen, Northern Kentucky University

9:00 a.m. – 9:10 a.m.

#### Alan Turing – A Brief Survey

Linda Becerra, University of Houston-Downtown; Ron Barnes, University of Houston-Downtown

9:15 a.m. – 9:20 a.m.

#### Beauty in Mathematical Proofs

Manya Raman-Sundström, Umeå University

9:30 a.m. – 9:40 a.m.

#### Athens to Istanbul: A Tour of Infinity

Brian Hollenbeck, Emporia State University

# MAA MathFest 2012

## TIMETABLE

9:45 a.m. – 9:55 a.m.

**External Influences on Undergraduate Mathematics Curricula: 1950-2000**

Walter Meyer, Adelphi University

10:00 a.m. – 10:10 a.m.

**A Math History Course for Liberal Arts Majors**

Brian Beavers, Stephen F. Austin State University

10:15 a.m. – 10:25 a.m.

**A Brief History of Rigidity**

Susan Foege, Kentucky State University

8:30 a.m. – 9:20 a.m., Ballroom AB

**MAA-AWM Etta Z. Falconer Lecture**

**Because I Love Mathematics: The Role of Disciplinary Grounding in Mathematics**

Karen King, National Council of Teachers of Mathematics

8:30 a.m. – 11:05 a.m., Hall of Ideas E

**Contributed Paper Session**

**Open and Accessible Programs in Combinatorics and Graph Theory**

Cayla McBee, Providence College; Lynette Boos, Providence College

8:30 a.m. – 8:45 a.m.

**Tree Packing Conundrums**

Susan Hollingsworth, Edgewood College

8:50 a.m. – 9:05 a.m.

**Stitching Graphs and Painting Mazes: Problems in Generalizations of Eulerian Walks**

Joshua Holden, Rose-Hulman Institute of Technology

9:10 a.m. – 9:25 a.m.

**Domination Problems in Families of Graph Products**

David Jacob Wildstrom, University of Louisville

9:30 a.m. – 9:45 a.m.

**Consecutive Radio Labelings**

Amanda Watkins, The University of Iowa

9:50 a.m. – 10:05 a.m.

**Graph Labelings for Undergraduate Research**

Zsuzsanna Szaniszló, Valparaiso University

10:10 a.m. – 10:25 a.m.

**On Some Open Problems in Graph Designs and Graph Labelings**

Saad El-Zanati, Illinois State University

10:30 a.m. – 10:45 a.m.

**Counting Closed Walks in Graphs to Get Nifty Combinatorial Formulas**

Michael Krebs, California State University, Los Angeles

10:50 a.m. – 11:05 a.m.

**Maximizing Code Words**

Thomas Q. Sibley, St. John's University

8:30 a.m. – 11:45 a.m., Meeting Room K

**MAA Student Paper Session #15**

8:30 a.m. – 11:45 a.m., Meeting Room L

**MAA Student Paper Session #16**

8:30 a.m. – 11:45 a.m., Meeting Room M

**MAA Student Paper Session #17**

8:30 a.m. – 11:45 a.m., Meeting Room N

**MAA Student Paper Session #18**

8:30 a.m. – 11:45 a.m., Meeting Room O

**Pi Mu Epsilon Student Paper Session #5**

8:30 a.m. – 11:45 a.m., Meeting Room P

**Pi Mu Epsilon Student Paper Session #6**

9:00 a.m. – 5:00 p.m., Monona Terrace

**Exhibit Hall**

9:00 a.m. – 5:00 p.m., Exhibit Hall

**Student Hospitality Center**

9:30 a.m. – 10:20 a.m., Ballroom AB

**Invited Address**

**Earle Raymond Hedrick Lecture #2: Convex Algebraic Geometry**

Bernd Sturmfels, University of California Berkeley

9:30 a.m. – 11:25 a.m., Friday, Hall of Ideas G

**Contributed Paper Session**

**Inquiry-Based Learning Best Practices, Session 1**

Dana Campbell Ernst, Plymouth State University; Angie Hodge, University of Nebraska at Omaha; Stan Yoshinobu, Cal Poly San Luis Obispo

9:30 a.m. – 9:45 a.m.

**A Modified-Moore Method Approach to Abstract Algebra**

David Taylor, Roanoke College

9:50 a.m. – 10:05 a.m.

**Activities in Upper Division Math Classes: Advantages and Challenges**

Brigitte Lahme, Sonoma State University

10:10 a.m. – 10:25 a.m.

**Capstone First: Starting With a Research Seminar**

David Olson, Michigan Technological University

10:30 a.m. – 10:45 a.m.

**Hands Off! Inquiry-Based Learning in Senior Number Theory**

David Clark

10:50 a.m. – 11:05 a.m.

**Co-Teaching a Credit-Enriched Section of Abstract Algebra**

Patrick Rault, SUNY Geneseo; Olympia Nicodemi, SUNY Geneseo

11:10 a.m. – 11:25 a.m.

**Opening the Lines of Communication With Your IBL Students**

Susan Bailey Crook, North Carolina State University

10:30 a.m. – 11:20 a.m., Ballroom AB

**James R. Leitzel Lecture**

**The Many Faces of Mentoring**

Sylvia Bozeman, Spelman College

11:30 a.m. – 11:50 a.m., Ballroom AB

**MAA Prize Session**

1:00 p.m. – 1:50 p.m., Ballroom A

**NAM David Blackwell Lecture**

**The Marriage Between Disease Dynamics and Mathematics: A History of Success**

*Carlos Castillo-Chavez, Arizona State University*

1:00 p.m. – 2:00 p.m., Ballroom B

**MAA Undergraduate Student Activity**

**Entertaining Math: Juggling, Magic and Circus Tricks**

*Speaker: Tim Chartier, Davidson College*

1:00 p.m. – 2:00 p.m., Ballroom C

**MAA Undergraduate Student Activity**

**Mathematical Untuition – Just How Far Astray Can Your Mathematical Common Sense Mislead You?**

*Speaker: Brian Conrey, American Institute of Mathematics*

1:00 p.m. – 2:20 p.m., Lecture Hall

**Panel Session**

**Designing Studies to Measure the Effectiveness of Online Homework**

*Organizers: John Travis, Mississippi College; Jason Aubrey, University of Missouri*

*Panelists: Flora McMartin, Broad-based Knowledge; Andy Bennet, Kansas State University; Aaron Wangberg, Winona State University; Dale Dawes, City University of New York–Borough of Manhattan Community College*

*Sponsors: Committee on Technologies in Mathematics Education; WEB SIGMAA*

1:00 p.m. – 2:55 p.m., Hall of Ideas H

**Contributed Paper Session**

**The History of Mathematics and its Uses in Teaching and Learning Mathematics**

*Kelli Staten, University of North Carolina Wilmington; Scott Guthery, Docent Press*

1:00 p.m. – 1:15 p.m.

**How Rodrigues Did It: The Geometric Discovery of Quaternion Multiplication**

*Bob Palais, Utah Valley University*

1:20 p.m. – 1:35 p.m.

**Who First Proved that  $C/d$  is a Constant?**

*David Richeson, Dickinson College*

1:40 p.m. – 1:55 p.m.

**Using Ancient Egyptian Fractions in Teaching Developmental Math**

*Shenglan Yuan, LaGuardia Community College*

2:00 p.m. – 2:15 p.m.

**An MAA/Tensor Project: Young Women Studying the History of Mathematics**

*Kathleen Michelle Clark, Florida State University*

2:20 p.m. – 2:35 p.m.

**Emanuel Lasker: Mathematician and Chess Immortal**

*Charlie Smith, Park University*

2:40 p.m. – 2:55 p.m.

**Finding Euler Cycles: A French Criticism and Solution**

*Brian Hopkins, Saint Peter's College*

1:00 p.m. – 3:00 p.m., Hall of Ideas I

**Minicourse #1, Part 2**

**Mathematics for Business Decisions**

*Presenter: Marilou Mendel, Pima Community College*

1:00 p.m. – 3:00 p.m., Hall of Ideas J

**Minicourse #2, Part 2**

**WebWork Homework Problems with Embedded Flash Applets**

*Presenters: Barbara Margolius, Cleveland State University; Dan Gries, The Hopkins School; Felipe Martins, Cleveland State University*

1:00 p.m. – 3:15 p.m., Hall of Ideas E

**Contributed Paper Session**

**Recreational Mathematics: New Problems and New Solutions, Session 1**

*Paul Coe, Dominican University; Kristen Schemmerhorn, Dominican University*

1:00 p.m. – 1:15 p.m.

**Celebration of Mind: Perpetuating the Legacy of Martin Gardner**

*Colm K. Mulcahy, Spelman College*

1:20 p.m. – 1:35 p.m.

**A Graph-Theoretic Analysis of Rubik's Slide Puzzle**

*Michael A. Jones, Mathematical Reviews; Brittany Shelton, Lehigh University; Miriam Weaverdyck, Bethel College*

1:40 p.m. – 1:55 p.m.

**Mancala as Nim**

*Andrew J Simoson, King College*

2:00 p.m. – 2:15 p.m.

**Graph-based Model of Crossword Puzzle Solution Process**

*John Kingen McSweeney, Rose-Hulman Institute of Technology*

2:20 p.m. – 2:35 p.m.

**Unique KenKen Over a Set of Complex Numbers**

*David Nacin, William Paterson University*

2:40 p.m. – 2:55 p.m.

**How Many Unique 4 by 4 Natural Magic Squares are There?**

*Peter Staab, Fitchburg State University*

3:00 p.m. – 3:15 p.m.

**The Upper Bound of a Triangle-Free Game of Hajnal**

*David Jacob Wildstrom, University of Louisville*

1:00 p.m. – 3:15 p.m., Hall of Ideas F

**Contributed Paper Session**

**Engaging Undergraduates in Geometry Courses, Session 1**

*Sarah L. Mabrouk, Framingham State University; James Hamblin, Shippensburg University; M. Brad Henry, Siena College*

1:00 p.m. – 1:15 p.m.

**The Pizza Theorem and the Joy of Discovery**

*Michael Nathanson, Saint Mary's College of California*

# MAA MathFest 2012

## TIMETABLE

1:20 p.m. – 1:35 p.m.

### **Two Geometry Problems**

Aaron Hill, University of North Texas

1:40 p.m. – 1:55 p.m.

### **Elementary and Advanced Coordinate Geometry Exercises on a Single Triangle, with Euclidean Connections**

J. Bradford Burkman, Louisiana School for Math, Science, and the Arts

2:00 p.m. – 2:15 p.m.

### **Geodesic Intuition**

Michael Kerckhove, University of Richmond

2:20 p.m. – 2:35 p.m.

### **Developing Intuition for Hyperbolic Geometry**

Ruth I. Berger, Luther College

2:40 p.m. – 2:55 p.m.

### **Finding a Balance Between Rigor and Exploration in a Non-Euclidean Geometry Course**

Jeffrey Clark, Elon University

3:00 p.m. – 3:15 p.m.

### **Imagine This: 600 Cells in 4D**

John Wasserstrass, UW-Rock County

1:00 p.m. – 3:55 p.m., Meeting Room R

### **General Contributed Paper Session**

#### **Research in Algebra, Topology, or Analysis**

David Housman, Goshen College; (Session Organizer) Nancy Ann Neudauer, Pacific University

1:00 p.m. – 1:10 p.m.

### **Preserving Quasi-Metrics**

Robert Vallin, Slippery Rock University

1:15 p.m. – 1:25 p.m.

### **Algebra Associated to the Hasse Graph of the $n$ -Cube**

Colleen Duffy, University of Wisconsin - Eau Claire

1:30 p.m. – 1:40 p.m.

### **Algebraic Combinatorics Related to the Kronecker Coefficients**

Lauren Kelly Williams, University of Wisconsin, Milwaukee

1:45 p.m. – 1:55 p.m.

### **Discrete Morse Theory and the Homology of Simplicial Complexes**

Nick Scoville, Ursinus College

2:00 p.m. – 2:10 p.m.

### **Generalized Factorization in Commutative Rings with Zero-Divisors**

Christopher Park Mooney, University of Iowa

2:15 p.m. – 2:25 p.m.

### **Explicit Calculations of Local Formal Integral Transforms**

Adam Graham-Squire, High Point University

2:30 p.m. – 2:40 p.m.

### **Hadwiger Integration of Functionals**

Matthew Wright, Huntington University

2:45 p.m. – 2:55 p.m.

### **Kostant Superalgebras for the Simple Classical Map Superalgebras**

Samuel Chamberlin, Park University; Irfan Bagci, University of California, Riverside

3:00 p.m. – 3:10 p.m.

### **A Generalized Euler constant**

Bruce Atkinson, Samford University

3:15 p.m. – 3:25 p.m.

### **Hilbert Spaces of Measures; and Some of their Applications**

Robert Niedzialomski, University of Iowa

3:30 p.m. – 3:40 p.m.

### **Introduction to the Time Scale Calculus and the Generalized Exponential Function**

Chris Ahrendt, University of Wisconsin-Eau Claire; Kevin Ahrendt, University of Nebraska-Lincoln

3:45 p.m. – 3:55 p.m.

### **The Geometry of Cubic Polynomials**

Christopher Frayer, University of Wisconsin- Platteville

1:00 p.m. – 4:35 p.m., Hall of Ideas G

### **Contributed Paper Session**

#### **Inquiry-Based Learning Best Practices, Session 2**

Dana Campbell Ernst, Plymouth State University; Angie Hodge, University of Nebraska at Omaha; Stan Yoshinobu, Cal Poly San Luis Obispo

1:00 p.m. – 1:15 p.m.

### **A Model for IBL in Mathematics Content Courses for Prospective Elementary School Teachers**

Jessica Audet de la Cruz, Assumption College

1:20 p.m. – 1:35 p.m.

### **One Model of IBL for Practicing Teachers**

Diana White, University of Colorado Denver

1:40 p.m. – 1:55 p.m.

### **Teaching and Learning the Arithmetic of Complex Numbers through IBL with Inservice Secondary Teachers**

Hortensia Soto-Johnson, University of Northern Colorado; Gulden Karakok, University of Northern Colorado; Stephanie Anderson, University of Northern Colorado

2:00 p.m. – 2:15 p.m.

### **An IBL Enrichment Summer Short Course for BC Calculus Students**

Robert Sachs, George Mason University

2:20 p.m. – 2:35 p.m.

### **Hybridized Methods in Freshman Calculus**

Randall E. Cone, Virginia Military Institute

2:40 p.m. – 2:55 p.m.

### **Pwnage!**

Jonas D'Andrea, Westminster College

3:00 p.m. – 3:15 p.m.

**The POGIL Project: Student-Centered Learning in Calculus Preliminary Report**

Catherine Beneteau, University of South Florida; Zdenka Guadarrama, Rockhurst University; Jill Guerra, University of Arkansas Fort Smith; Laurie Lenz, Marymount University

3:20 p.m. – 3:35 p.m.

**Creating an IBL/Flipped-Classroom Hybrid**

Bret Jordan Benesh, College of Saint Benedict/Saint John's University

3:40 p.m. – 3:55 p.m.

**Higher-Order Tasks in an Inquiry-Based Course**

Brian Katz, Augustana College; Elizabeth Thoren, University of California Santa Barbara

4:00 p.m. – 4:15 p.m.

**IBL for Fun?**

Ryan Gantner, Saint John Fisher College

4:20 p.m. – 4:35 p.m.

**Transitioning to Teaching Abstract Algebra as IBL**

Mindy Capaldi, Valparaiso University

1:00 p.m. – 4:45 p.m., Ballroom D

**MAA-AMS Special Session**

**What Mathematics Should Every Citizen Know—And How Does K-16 Get Us There?**

David Mumford, Brown University; Solomon Garfunkel, Consortium for Mathematics and its Applications

1:00 p.m. – 1:30 p.m.

**Beyond Shoulds and Oughts: Is Consensus Worth It?**

William McCallum, University of Arizona

1:45 p.m. – 2:15 p.m.

**Reflections on Mathematics and Democracy**

Lynn Steen, St. Olaf College

2:30 p.m. – 3:00 p.m.

**What Mathematics Every American Needs**

Hyman Bass, University of Michigan

3:30 p.m. – 4:00 p.m.

**Mathematical Tools for the Masses**

Joseph Malkevitch, York College of the City University of New York

4:15 p.m. – 4:45 p.m.

**Mathematical Modeling as the Heart of the Mathematics Curriculum**

Solomon Garfunkel, Consortium for Mathematics and its Applications

1:00 p.m. – 5:25 p.m., Meeting Room Q

**General Contributed Paper Session**

**Teaching or Learning Calculus**

David Housman, Goshen College; (Session Organizer) Nancy Ann Neudauer, Pacific University

1:00 p.m. – 1:10 p.m.

**“YouBook”: Interactive Editable Mathematics Textbook—the Key to Online Mathematics**

Denise LeGrand, UALR

1:15 p.m. – 1:25 p.m.

**On the Role of Assessment in the Design of Online Resources for Learning Mathematics**

Douglas B. Meade, University of South Carolina; Phillip B. Yasskin, Texas A&M University

1:30 p.m. – 1:40 p.m.

**Flash Applets Embedded in WeBWork Homework Problems**

Barbara Margolius, Cleveland State University; L. Felipe Martins, Cleveland State University; Daniel Gries, Hopkins School

1:45 p.m. – 1:55 p.m.

**Toward a Freer Calculus: A Free, Open-Source Calculus Textbook**

Matt Boelkins, Grand Valley State University

2:00 p.m. – 2:10 p.m.

**Oral Reviews in Calculus: Improving Student Understanding**

Allison Henrich, Seattle University

2:15 p.m. – 2:25 p.m.

**Examining the Relationship between Class Preparation and Student Success on Daily Quizzes**

Phillip LaCasse, US Military Academy at West Point

2:30 p.m. – 2:40 p.m.

**A New Quantitative Modeling Course for First-Year Biology Students**

Dmitry Kondrashov, University of Chicago

2:45 p.m. – 2:55 p.m.

**Modifications to the Calculus Sequence**

Jane M. Mcdougall, Colorado College

3:00 p.m. – 3:10 p.m.

**Recalling Prerequisite Material to Aid in Student Success in Calculus II**

Jeanette Olli, Dominican University

3:15p.m. – 3:25 p.m.

**Calculus across the Atlantic**

Nermine El Sissi, The American University in Cairo

3:30 p.m. – 3:40 p.m.

**Helping Students Develop Metacognitive Skills in Mathematics**

Michelle Ghrist, U.S. Air Force Academy

3:45 p.m. – 3:55 p.m.

**Recent Advances in Teaching and Learning the Formal Definition of Limit**

Tim Boester, Wright State University

# MAA MathFest 2012

## TIMETABLE

4:00 p.m. – 4:10 p.m.

### **How a Computer Evaluates Trig Functions**

Todd King, Michigan Technological University; Allan Struthers, Michigan Technological University

4:15 p.m. – 4:25 p.m.

### **Students' Natural Discovery of the Integral Test for Infinite Series**

Rebecca Schmitz, Michigan Technological University

4:30 p.m. – 4:40 p.m.

### **Students' Ways of Thinking about Directional Derivative**

Eric Weber, Oregon State University

4:45 p.m. – 4:55 p.m.

### **Applications of Computer Algebra Systems (CAS) to Multivariable Calculus**

Leon Kaganovskiy, Touro College

5:00 p.m. – 5:10 p.m.

### **PDE in Calculus III**

Michael Kerckhove, University of Richmond

5:15 p.m. – 5:25 p.m.

### **A Simple Technique for Sketching in Three Dimensions**

Howard Dwyer, Monmouth College

2:00 p.m. – 3:55 p.m., Meeting Room K

### **MAA Student Paper Session #19**

2:00 p.m. – 3:55 p.m., Meeting Room L

### **MAA Student Paper Session #20**

2:00 p.m. – 3:55 p.m., Meeting Room M

### **MAA Student Paper Session #21**

2:00 p.m. – 3:55 p.m., Meeting Room N

### **MAA Student Paper Session #22**

2:00 p.m. – 3:55 p.m., Meeting Room O

### **Pi Mu Epsilon Student Paper Session #7**

2:00 p.m. – 3:55 p.m., Meeting Room P

### **Pi Mu Epsilon Student Paper Session #8**

2:00 p.m. – 5:20 p.m., Ballroom C

### **Invited Speaker Session**

#### **Walk the Walk, Talk the Talk**

Georgia Benkart, University of Wisconsin – Madison;  
Tom Halverson, Macalester College

2:00 p.m. – 2:20 p.m.

### **A Funny Thing Happened on the Way to Steppenwolf Theatre: from Lattice Paths to Polytopes and Hopf Algebras**

Kyle Petersen, DePaul University

2:30 p.m. – 2:50 p.m.

### **Maximal Length Chains in the Tamari Lattice**

Susanna Fishel, Arizona State University

3:00 p.m. – 3:20 p.m.

### **Pattern-Avoiding Permutations and Lattice Paths: Old Connections and New Links**

Eric Egge, Carleton College

3:30 p.m. – 3:50 p.m.

### **That's the Way the Ball Bounces: The Story of the q.t-Catalan Polynomial**

Kendra Killpatrick, Pepperdine University

4:00 p.m. – 4:20 p.m.

### **Walks on Walks**

Jim Propp, University of Massachusetts Lowell

4:30 p.m. – 4:50 p.m.

### **Random Walks via Quasisymmetric Functions**

Sam Hsiao, Bard College

5:00 p.m. – 5:20 p.m.

### **Random Walks on Set Partitions**

Tom Halverson, Macalester College

2:00 p.m. – 3:20 p.m., Ballroom A

### **Alder Awards Session**

#### **I Failed and No One Died**

Kathryn Leonard, California State University Channel Islands

#### **An ORnate ORation on OR**

Susan Martonosi, Harvey Mudd College

#### **Practicing What We Preach: Evidence-Based Evaluation of Your Classroom Teaching and Pedagogical Innovations**

Michael A. Posner, Villanova University

2:35 p.m. – 3:55 p.m., Ballroom B

### **Panel Session**

#### **Mentoring Undergraduates on Research: A Kaleidoscope of Models**

Organizer: Jenna P. Carpenter, Louisiana Tech University  
Panelists: Patrick Bahls, University of North Carolina at Asheville; Francis Su, Harvey Mudd College; Michael Dorff, Brigham Young University; Annalisa Crannell, Franklin & Marshall College  
Sponsor: Professional Development Committee

2:35 p.m. – 3:55 p.m., Lecture Hall

### **Panel Session**

#### **Issues for Early Career Mathematicians in Academia**

Organizer: Doug Ensley, Shippensburg University  
Panelists: Rick Cleary, Bentley University; Jennifer Quinn, University of Washington – Tacoma; Robert Talbert, Grand Valley State University  
Sponsor: Committee on Early Career Mathematicians

3:00 p.m. – 4:30 p.m., Exhibit Hall

### **Poster Session**

#### **PosterFest 2012: A Poster Session of Scholarship by Early Career Mathematicians and Graduate Students**

Organizer: Jennifer Roche Bowen, The College of Wooster  
Sponsors: Early Career Mathematicians Committee; Graduate Student Committee; Young Mathematicians Network

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ematics instruction that we have seen.*



# MAA MathFest 2012

## TIMETABLE

3:30 p.m. – 5:30 p.m., Hall of Ideas I

### **Minicourse #3, Part 1**

#### **Mathemagic with a Deck of Cards**

Presenter: "Card Colm" Mulcahy, Spelman College

3:30 p.m. – 5:30 p.m., Hall of Ideas J

### **Minicourse #4, Part 1**

#### **Making Math Relevant: A Multidisciplinary Sustainability Module for Calculus**

Presenter: Thomas J. Pfaff, Ithaca College; Jason Hamilton, Ithaca College

4:00 p.m. – 6:15 p.m., Meeting Room K

### **MAA Student Paper Session #23**

4:00 p.m. – 6:15 p.m., Meeting Room L

### **MAA Student Paper Session #24**

4:00 p.m. – 6:15 p.m., Meeting Room M

### **MAA Student Paper Session #25**

4:00 p.m. – 6:15 p.m., Meeting Room N

### **MAA Student Paper Session #26**

4:00 p.m. – 6:15 p.m., Meeting Room O

### **Pi Mu Epsilon Student Paper Session #9**

4:00 p.m. – 6:15 p.m., Meeting Room P

### **Pi Mu Epsilon Student Paper Session #10**

4:10 p.m. – 5:30 p.m., Ballroom A

### **Workshop**

#### **Proposal Writing Workshop for Grant Applications to the NSF Division of Undergraduate Education**

Organizers: Ron Buckmire and Lee Zia, Division of Undergraduate Education, National Science Foundation

4:10 p.m. – 5:30 p.m., Ballroom B

### **Panel Session**

#### **Effective Strategies for Teaching Classes for Non-Majors**

Organizers: Gizem Karaali, Pomona College; Feryal Alayont, Grand Valley State University; and Lerna Pehlivan, York University  
Panelists: Michael Starbird, University of Texas Austin; Judith Grabiner, Pitzer College; Andrew Miller, Belmont University; and Rachelle DeCosta, Wheaton College  
Sponsor: SIGMAA QL

4:10 p.m. – 5:30 p.m., Hall of Ideas F

### **RUME Workshop**

4:10 p.m. – 5:30 p.m., Lecture Hall

### **Panel Session**

#### **An Update on the Mathematical Education of Teachers II Report**

Organizers: Angie Hodge, University of Nebraska Omaha; Beth Burroughs, Montana State University; Judith Covington University of Louisiana Shreveport  
Panelists: William McCallum, University of Arizona; Al Cuoco, Educational Development Center; Alan Tucker, State University of New York at Stony Brook  
Sponsor: Committee on the Mathematical Education of Teachers (COMET)

5:00 p.m. – 6:30 p.m., Hall of Ideas E

### **WEB SIGMAA**

#### **Business Meeting, Reception, and Discussion**

5:00 p.m. – 6:30 p.m., Hall of Ideas H

### **POM SIGMAA**

#### **Reception**

5:30 p.m. – 6:30 p.m., Hall of Ideas H

### **POM SIGMAA Guest Lecture**

**Is the Proof on the Picture? Seeing, Believing, and Proving**  
Janet Folina, Macalester College

6:00 p.m. – 8:00 p.m., Community Terrace

### **Pi Mu Epsilon Student Banquet and Awards Ceremony**

8:00 p.m. – 8:50 p.m., Ballroom AB

### **Pi Mu Epsilon J. Sutherland Frame Lecture**

#### **The Chemistry of Primes**

Melanie Matchett Wood, University of Wisconsin – Madison

9:00 p.m. – 10:00 p.m., Community Terrace

### **MAA Ice Cream Social and Undergraduate Awards Ceremony**

## SATURDAY, AUGUST 4, 2012

6:00 a.m. – 9:00 a.m., Monona Terrace Community and Convention Center

### **5K Fun Run & Walk**

7:30 a.m. – 12:00 p.m., Monona Terrace

### **Registration**

8:00 a.m. – 10:10 a.m., Meeting Room Q

### **General Contributed Paper Session**

#### **Research in Applied Mathematics**

David Housman, Goshen College; Nancy Neudauer, Pacific University

8:00 a.m. – 8:10 a.m.

#### **Zero-Order 'Rainbows', Electromagnetic Wave Equations and Poles of the Scattering Matrix: What's All That About?**

John Anthony Adam, Old Dominion University

8:15 a.m. – 8:25 a.m.

#### **Compressive Video Recovery Using Bound-Constrained Optimization**

Roummel Marcia, University of California, Merced

8:30 a.m. – 8:40 a.m.

#### **A Coupled Mixed Finite Element Method for Fluid-Structure Interaction**

Edward Swim, Sam Houston State University

8:45 a.m. – 8:55 a.m.

#### **Convergence of an Immersed Finite Element Method for Parabolic Interface Problems**

Champike Attanayake, Miami University

9:00 a.m. – 9:10 a.m.

#### **Critical Points of the Non-Seperable Extended Rosenbrock Function**

Allan Struthers, Michigan Technological University

9:15 a.m. – 9:25 a.m.

**Optimal Parameters for Klein-Gordon Equation with Neumann Boundary Condition**

*Narayan Thapa, Minot State University*

9:30 a.m. – 9:40 a.m.

**Stochastic Models for Heat Flow in a Cylinder**

*Darwin Omar Luna, SHSU; Edward Swim, Sam Houston State University*

9:45 a.m. – 9:55 a.m.

**Visualizing Clusters in Neural Networks**

*Paul Pearson, Fort Lewis College*

8:00 a.m. – 10:25 a.m., Meeting Room R

**General Contributed Paper Session**

**Assessment, Mentoring, or Outreach**

*David Housman, Goshen College; Nancy Ann Neudauer, Pacific University*

**8:00 a.m. – 8:10 a.m.**

**Working with Public Schools: Creating Math Enrichment for Elementary Students**

*Beth Schaubroeck, U.S. Air Force Academy*

8:15 a.m. – 8:25 a.m.

**Si Se Puede - An Outreach Program for Middle School Hispanic Students**

*Elizabeth Yanik, Emporia State University; Joe Yanik, Emporia State University*

8:30 a.m. – 8:40 a.m.

**The Bridge Program Helping Students Transition into College without Remediation**

*Senan Hayes, Western Connecticut State University; Josie Hamer, Western Connecticut State University*

8:45 a.m. – 8:55 a.m.

**A Recipe for Change: A Look at Mathematics Placement for Transfer Students**

*Rebecca Metcalf, Bridgewater State University; Irina Seceleanu, Bridgewater State University*

9:00 a.m. – 9:10 a.m.

**Growing a Learning Center: From a Small, Underfunded Closet to a Popular Learning Space**

*Maighread McHugh, UW-La Crosse; Karoline Auby, UW-La Crosse*

9:15 a.m. – 9:25 a.m.

**A Mathematical Amazing Race: The Radical Dash**

*Jennifer Bergner, Salisbury University*

9:30 a.m. – 9:40 a.m.

**Mathematical T-Shirts**

*Richard Askey, University of Wisconsin*

9:45 a.m. – 9:55 a.m.

**Finding Funding and Support for Doing Undergraduate Research**

*Michael Dorff, Brigham Young University; Darren Narayan, Rochester Institute of Technology*

10:00 a.m. – 10:10 a.m.

**Creating a Culture of Success: A Professional Development Program for Women Faculty**

*Jenna P. Carpenter, Louisiana Tech University; Patrick O'Neal, Louisiana Tech University*

8:30 a.m. – 9:20 a.m., Ballroom AB

**MAA Invited Address**

**Random Interfaces and Limit Shapes**

*Speaker: Richard Kenyon, Brown University*

9:00 a.m. – 10:30 a.m., Hall of Ideas F

**Mathematical Competition in Modeling Awards**

9:00 a.m. – 12:30 p.m., Exhibit Hall

**Student Hospitality Center**

9:00 a.m. – 12:30 p.m., Monona Terrace

**Exhibit Hall**

9:30 a.m. – 10:20 a.m., Ballroom AB

**Invited Address**

**Earle Raymond Hedrick Lecture #3: The Central Curve in Linear Programming**

*Bernd Sturmfels, University of California Berkeley*

9:30 a.m. – 11:25 a.m., Hall of Ideas G

**Contributed Paper Session**

**Inquiry-Based Learning Best Practices, Session 3**

*Dana Campbell Ernst, Plymouth State University; Angie Hodge, University of Nebraska at Omaha; Stan Yoshinobu, Cal Poly San Luis Obispo*

9:30 a.m. – 9:45 a.m.

**An IBL Liberal Arts Mathematics Course**

*Anders Hendrickson, Concordia College*

9:50 a.m. – 10:05 a.m.

**Deep Content and Greatest Hits for a Liberal Arts Mathematics Course**

*Theron James Hitchman, University of Northern Iowa*

10:10 a.m. – 10:25 a.m.

**IBL in a Liberal Arts Mathematics Course**

*Jacqueline Jensen-Vallin, Slippery Rock University*

10:30 a.m. – 10:45 a.m.

**Student-Driven Symmetry Classification**

*Martha Ellen Waggoner, Simpson College*

10:50 a.m. – 11:05 a.m.

**Constructing Effective Inquiry Questions for Mathematical Applets**

*Wade Ellis, West Valley College*

11:10 a.m. – 11:25 a.m.

**Preparing Students for Inquiry-Based Learning: Lessons Learned from the Online Learning Environment**

*Allen Gregg Harbaugh, Murdoch University*

# MAA MathFest 2012

## TIMETABLE

9:30 a.m. – 11:45 a.m., Hall of Ideas H

### Contributed Paper Session

#### Recreational Mathematics: New Problems and New Solutions, Session 2

Paul Coe, Dominican University; Kristen Schemmerhorn, Dominican University

9:30 a.m. – 9:45 a.m.

#### Home Prime Reversals

Jay Lawrence Schiffman, Rowan University

9:50 a.m. – 10:05 a.m.

#### Introducing the Peculiar “Davidson Sequence”

William Davidson, Saint Mary’s University of Minnesota

10:10 a.m. – 10:25 a.m.

#### A Collatz-Like Iteration

Vincent J. Matsko, IMSA

10:30 a.m. – 10:45 a.m.

#### The Man Who Whammied “Press Your Luck”

Anthony DeLegge, Benedictine University

10:50 a.m. – 11:05 a.m.

#### Guesses, Metrics, and Basketball

David Clark, Randolph-Macon College

11:10 a.m. – 11:25 a.m.

#### Magic Tricks Involving Error Correcting Codes

Todd Mateer, Howard Community College

11:30 a.m. – 11:45 a.m.

#### Circle Packing: Combinatorics, Geometry, and Computation

Christopher T. Sass, Young Harris College

9:30 a.m. – 10:20 a.m., Hall of Ideas E

### Math Circles Demo, Session 1

10:30 a.m. – 11:20 a.m., Ballroom AB

### MAA Invited Address

#### Putting Topology to Work

Robert Ghrist, University of Pennsylvania

10:30 a.m. – 11:20 a.m., Hall of Ideas E

### Math Circles Demo, Session 2

11:30 a.m. – 11:50 a.m., Ballroom AB

### Business Meeting

1:00 p.m. – 2:15 p.m., Hall of Ideas E

### Contributed Paper Session

#### Assessment of Courses For Students in Math-Intensive Majors

Aimee Ellington, Virginia Commonwealth University

1:00 p.m. – 1:15 p.m.

#### Assessing Basic Learning of First-Year Engineers in a Required Calculus Sequence

Amanda Hattaway, Wentworth Institute of Technology; Anita Penta, Wentworth Institute of Technology; Gary Simundza, Wentworth Institute of Technology; Emma Smith Zbarsky, Wentworth Institute of Technology

1:20 p.m. – 1:35 p.m.

#### Assessment through Targeted True/False Question

Barbara A. Shipman, University of Texas at Arlington; Patrick Shipman, Colorado State University

1:40 p.m. – 1:55 p.m.

#### Are Oral Panels an Effective Assessment Tool in an Engineering Mathematics Course?

Kevin Treat, US Air Force Academy; Jim Rolf, US Air Force Academy

2:00 p.m. – 2:15 p.m.

#### An Assessment Plan for Courses Taken By Math-Intensive Majors

Aimee Ellington, Virginia Commonwealth University

1:00 p.m. – 2:15 p.m., Hall of Ideas H

### Student Problem Solving Competition

1:00 p.m. – 2:20 p.m., Hall of Ideas G

### Workshop

#### Writing for MAA Journals

Organizer: Michael Henle, Oberlin College

1:00 p.m. – 2:20 p.m., Lecture Hall

### Panel Session

#### How Will CCSSM Influence High School and College Mathematics?

Organizers: Caren Diefenderfer, Hollins University; Semra Kilic-Bahi, Colby-Sawyer College; Martha Siegel, Towson University.

Panelists: Meg Meyer, University of Wisconsin, Madison; Dan Teague, North Carolina School of Science and Mathematics; Kristin Umland, University of New Mexico

Sponsors: Committee on the Undergraduate Program in Mathematics (CUPM), SIGMAA TAHSM; SIGMAA QL

1:00 p.m. – 2:55 p.m., Hall of Ideas F

### Contributed Paper Session

#### Engaging Undergraduates in Geometry Courses, Session 2

Sarah L. Mabrouk, Framingham State University; James Hamblin, Shippensburg University; M. Brad Henry, Siena College

1:00 p.m. – 1:15 p.m.

#### Are We There Yet? Distance and Persistence in the Poincaré Model

Jason Douma, University of Sioux Falls

1:20 p.m. – 1:35 p.m.

#### Hubcap Geometry

David Eugene Ewing

1:40 p.m. – 1:55 p.m.

#### Propelling Students into the Projective Plane

Sam Vandervelde, St. Lawrence University

2:00 p.m. – 2:15 p.m.

#### Comparison of Quadrilateral Definitions in Euclidean and Non-Euclidean Geometries

Filiz Dogru, Grand Valley State University; David Schlueter, Vanderbilt University; Jiyeon Suh, Grand Valley State University

2:20 p.m. – 2:35 p.m.

#### Teaching Mathematical Maturity through Axiomatic Geometry

Brian Katz, Augustana College

Join us for a Conversation & Demonstration of...

**Calculus:  
Modeling &  
Application**  
the MAA's Interactive  
Calculus Textbook!

Presented by  
Lawrence C. Moore & David A. Smith  
Friday, August 3, 2012, 2:00 P.M.  
MAA Pavilion



**Using WeBWork  
with  
Mathematics for  
Business Decisions**

Presented by  
Marilou Mendel  
Friday, August 3, 2012, 11:30 A.M.  
MAA Pavilion



# 3 Books. 3 Days.

## Returning to MathFest 2012!

### Huge Discounts on Special Titles!

August 2 @ 2:30 P.M.: Special Sale Title for \$4!

August 3 @ 3:14 P.M.: Special Sale Title for \$5!

August 4 @ 11:30 A.M.: Special Sale Title for \$6!

\*Retail value ranges from \$30-\$60, so don't miss out! Limited copies available.

Follow us on Facebook & Twitter (#MAAthFest) daily at 3:14 pm and be the first to find out our special sale titles!



**MAA**

MATHEMATICAL ASSOCIATION OF AMERICA



# MAA MathFest 2012

## TIMETABLE

2:40 p.m. – 2:55 p.m.

**Topics in Spherical Geometry for Undergraduates**  
*Marshall A Whittlesey, California State University San Marcos*

1:00 p.m. – 2:55 p.m., Meeting Room Q

**General Contributed Paper Session**

**Teaching and Learning Advanced Mathematics**

*David Housman, Goshen College; Nancy Neudauer, Pacific University*

1:00 p.m. – 1:10 p.m.

**Preliminary Report: Strengthening Student Understanding of One-to-One and Onto Functions**  
*Donna Beers, Simmons College*

1:15 p.m. – 1:25 p.m.

**Chaos is Fun**  
*Bharathwaj Muthuswamy, Milwaukee School of Engineering*

1:30 p.m. – 1:40 p.m.

**Creating Mathematics**  
*Debra Czarneski, Simpson College*

1:45 p.m. – 1:55 p.m.

**Mapping the Common Core State Standards to Advanced Mathematical Knowledge for Teaching**  
*Julianna Connelly Stockton, Sacred Heart University; Nicholas Wasserman, Southern Methodist University*

2:00 p.m. – 2:10 p.m.

**On the Cusp in Calculus and Mathematics**  
*Christopher Frenzen, United States Naval Postgraduate School*

2:15 p.m. – 2:25 p.m.

**The True-False Binary Cards: A Hands-On Approach to Deductive Reasoning**  
*Robert Franzosa, University of Maine*

2:30 p.m. – 2:40 p.m.

**An Induction Formula Generator**  
*David Presnell Turner, Faulkner University*

2:45 p.m. – 2:55 p.m.

**Using Course Capture Technology to Supplement Classroom Learning**  
*Kristen Sellke, Saint Mary's University of Minnesota*

1:00 p.m. – 3:00 p.m., Hall of Ideas I

**Minicourse #5, Part 2**

**The Mathematics of Folding & Unfolding**  
*Presenter: Joseph O'Rourke, Smith College*

1:00 p.m. – 3:00 p.m., Hall of Ideas J

**Minicourse #6, Part 2**

**A Game Theory Path to Quantitative Literacy**  
*Presenter: David Housman, Goshen College*

1:00 p.m. – 2:55 p.m., Meeting Room R

**General Contributed Paper Session**

**Research in Number Theory, Geometry, or Linear Algebra**

*David Housman, Goshen College; Nancy Neudauer, Pacific University*

1:00 p.m. – 1:10 p.m.

**Bisecting the Simplex: A Tale of Two Symmetries**  
*John D. Pesek Jr, University of Delaware*

1:15 p.m. – 1:25 p.m.

**A Geometric Construction of Higher Dimension Counter – Examples to Relative Manin-Mumford**  
*Sean Howe, University of Chicago*

1:30 p.m. – 1:40 p.m.

**Generalizing Eves' Theorem**  
*Adam Coffman, Indiana University - Purdue University Fort Wayne*

2:00 p.m. – 2:10 p.m.

**Galois-Theoretic Invariants of Sextic Extensions of  $p$ -adic Fields**  
*Chad Awtrey, Elon University*

2:15 p.m. – 2:25 p.m.

**Modular Arithmetic on Rings of Algebraic Integers**  
*Nathan Moyer, Whitworth University*

2:30 p.m. – 2:40 p.m.

**Exploiting the Fibonacci Sequence of Order Three**  
*Jay Lawrence Schiffman, Rowan University*

2:45 p.m. – 2:55 p.m.

**A Zeta Function for Juggling Patterns**  
*Erik R. Tou, Carthage College*

3:00 p.m. – 3:10 p.m.

**Divisibility Plots**  
*Brian Heinold, Mount St. Mary's University*

1:00 p.m. – 3:50 p.m., Ballroom B

**Invited Paper Session**

**Mathematics and Systems Biology**

*Timothy Comar, Benedictine University*  
Sponsor: BIO SIGMAA

1:00 p.m. – 1:20 p.m.

**Bistability of the Lactose Operon of E. Coli: Comparing Differential Equation and Boolean Network Models**  
*Raina Robeva, Sweet Briar College*

1:30 p.m. – 1:50 p.m.

**Comparing Biological and Mathematical Models of Tissue Development in C. Elegans**  
*Brandilyn Stigler, Southern Methodist University*

2:00 p.m. – 2:20 p.m.

**Metabolic Pathways and Hypergraphs**  
*Terrell Hodge, Western Michigan University*

2:30 p.m. – 2:50 p.m.

**Complex Biological Systems: When Are Simple Models Good Enough?**  
*Winifried Just, Ohio University*

3:30 p.m. – 3:50 p.m.

**Comparison of the Dynamics of Boolean and Continuous Models for Small Gene**

**Regulatory Networks**

*Timothy Comar, Benedictine University*

1:00 p.m. – 4:50 p.m., Ballroom D

**Invited Paper Session**

**Applied and Computational Topology**

*Benjamin Mann, Ayasdi, Inc.; Jack Morava, Johns Hopkins University*

1:00 p.m. – 1:20 p.m.

**Evasion Paths in Mobile Sensor Networks**

*Henry Adams, Stanford University*

1:30 p.m. – 1:50 p.m.

**Persistent Homology for Metric Measure Spaces and Topological Hypothesis Testing**

*Andrew Blumberg, University of Texas*

2:00 p.m. – 2:20 p.m.

**Dualities in the Generalized Sensor Networks**

*Justin Curry, University of Pennsylvania*

2:30 p.m. – 2:50 p.m.

**What is Random Homology and Why Can it be Useful?**

*Rafal Komendarczyk, Tulane University*

3:00 p.m. – 3:20 p.m.

**Directed Poincaré Duality**

*Sanjeevi Krishnan, University of Pennsylvania*

3:30 p.m. – 3:50 p.m.

**Gene Clusters**

*Paul Pearson, Fort Lewis College*

4:00 p.m. – 4:20 p.m.

**A Klein Bottle Based Dictionary for Image Representation, and an Application to Texture Discrimination**

*Jose Perea, Duke University*

4:30 p.m. – 4:50 p.m.

**The Whitney Embedding Theorem in Signal Processing**

*Michael Robinson, University of Pennsylvania*

1:00 p.m. – 4:30 p.m., Ballroom C

**Invited Paper Session**

**Discrete Probability on Surfaces**

*Richard Kenyon, Brown University*

1:00 p.m. – 1:30 p.m.

**Beyond the Gaussian Universality Class**

*Ivan Corwin, New York University*

1:45 p.m. – 2:15 p.m.

**Random Walks in Random Environments and Random Potentials**

*Timo Seppalainen, University of Wisconsin*

2:30 p.m. – 3:00 p.m.

**Random Trees and Surfaces**

*Russell Lyons, Indiana University*

3:15 p.m. – 3:45 p.m.

**Operator Limits of Random Matrices**

*Benedek Valko, University of Wisconsin*

4:00 p.m. – 4:30 p.m.

**Growth, Erosion, and Competition Driven by Random and Non-Random Walk**

*James Propp, University of Massachusetts Lowell*

1:00 p.m. – 5:30 p.m., Meeting Room K

**Great Talks for a General Audience:**

**Coached Presentations by Graduate Students**

*Jim Freeman, Cornell College; Rachel Schwell, Central Connecticut State University*

1:00 p.m. – 1:10 p.m.

**Introduction / Information Session**

1:15 p.m. – 1:35 p.m.

**When Zombies Attack: Round Two**

*Frances Grace Withrow*

1:40 p.m. – 2:00 p.m.

**A Study of the Mathematical Model of Protein Synthesis Initiation**

*Sami Cheong*

2:05 p.m. – 2:25 p.m.

**Parametrized Maximum Principle Preserving Flux Limiters for High Order Scheme Solving Scalar Hyperbolic Conservation Laws**

*Chao Liang*

2:30 p.m. – 2:50 p.m.

**Investigation of a Model of Chagas Disease**

*Crystal Bennett*

2:55 p.m. – 3:15 p.m.

**Exploring the Conformation of Protein-Bound DNA: Adding Geometry to Know Topology**

*Mary Therese Padberg*

3:20 p.m. – 3:40 p.m.

**Modeling Quasicrystals: An Application of Hyperbolic Dynamics**

*May Mei*

3:45 p.m. – 4:05 p.m.

**Population Models and Chaotic Dynamics**

*Scott Kaschner*

4:45 p.m. – 5:30 p.m.

**Panel Discussion / Questions**

1:00 p.m. – 5:30 p.m., Meeting Room L

**Great Talks for a General Audience:**

**Coached Presentations by Graduate Students**

*Jim Freeman, Cornell College; Rachel Schwell, Central Connecticut State University*

1:00 p.m. – 1:10 p.m.

**Introduction / Information Session**

# MAA MathFest 2012

## TIMETABLE

1:15 p.m. – 1:35 p.m.

### **Playing with Bubbles: An Invitation to Undergraduate Research in Mathematics**

*Donald Charles Sampson*

1:40 p.m. – 2:00 p.m.

### **Closed Form Solutions to the Josephus Problem**

*Jennifer Hoxworth*

2:05 p.m. – 2:25 p.m.

### **On -Fold Rosa-Type Labelings and Cyclic Graph Decompositions**

*Ryan C. Bunge*

2:30 p.m. – 2:50 p.m.

### **Graphs in Facebook Friendships: How Connected Are We?**

*Megan Heenehan*

2:55 p.m. – 3:15 p.m.

### **The $r$ -Component Connectivity of the Generalized Petersen Graphs**

*Sarah Hanusch*

3:20 p.m. – 3:40 p.m.

### **The Game of Blash & Slash**

*Maximiliano Liprandi*

3:45 p.m. – 4:05 p.m.

### **New Factorizations of the Integers**

*Alina Florescu*

4:10 p.m. – 4:30 p.m.

### **Evil Monty Hall**

*Sean Howe*

4:45 p.m. – 5:30 p.m.

### **Panel Discussion / Questions**

2:30 p.m. – 3:30 p.m., Meeting Rooms M and N

### **Math Wrangle**

2:35 p.m. – 3:55 p.m., Lecture Hall

### **Panel Session**

### **CUPM “Birds of a Feather” Course Area Panel & Discussion: Mathematics Majors for 2015 and Beyond**

*Organizer: Martha Siegel, Towson University*

*Panelists: David Bressoud, Macalester College (Calculus and Analysis); Caren Diefenderfer, Hollins University (Linear Algebra); Harriet Pollatsek, Mt. Holyoke College (Abstract Algebra); Carol Schumacher, Kenyon College (Transition to Proof); Alan Tucker, SUNY Stony Brook (Discrete Mathematics)*

*Sponsor: Committee on the Undergraduate Program in Mathematics (CUPM)*

3:30 p.m. – 5:30 p.m., Hall of Ideas I

### **Minicourse #3, Part 2**

### **Mathemagic with a Deck of Cards**

*Presenter: “Card Colm” Mulcahy, Spelman College*

3:30 p.m. – 5:30 p.m., Hall of Ideas J

### **Minicourse #4, Part 2**

### **Making Math Relevant: A Multidisciplinary Sustainability Module for Calculus**

*Presenter: Thomas J. Pfaff, Ithaca College; Jason Hamilton, Ithaca College*

5:00 p.m. – 6:30 p.m., Hall of Ideas F

### **SIGMAA TAHSM**

### **Business Meeting**

Saturday, August 4, 5:00-5:30 p.m., Hall of Ideas F

### **Engaging High School Students in Research Experiences**

Saturday, August 4, 5:30-6:30 p.m., Hall of ideas F

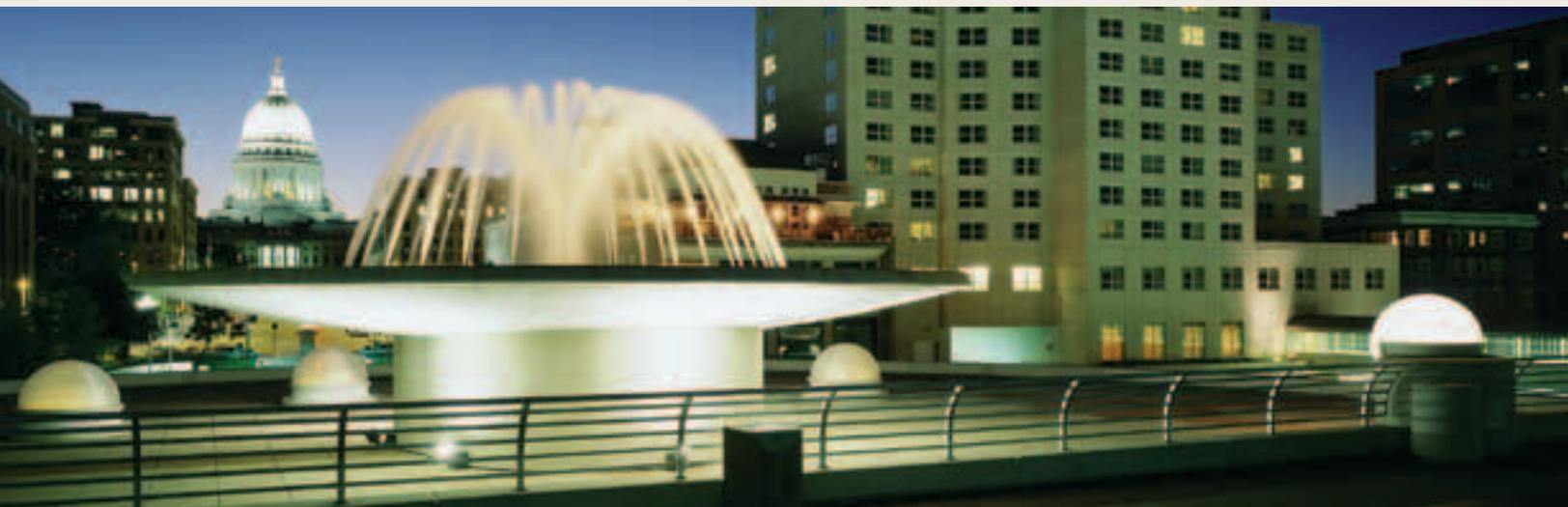
6:00 p.m. – 9:00 p.m., Ballroom AB

### **Silver and Gold Reception and Banquet**

### **Multiple Perspectives on Knowing and Teaching Mathematics**

*Speaker: Gail Burrill, Michigan State University*

*MC: Eileen Poiani, St. Peter’s College*



# COMMERCIAL PRESENTATIONS

## MATHFEST 2012 COMMERCIAL PRESENTATIONS

### Hawkes Learning Systems

Thursday, August 2, 2012, 5:30 p.m. – 7:00 p.m., Monona Terrace Meeting Room Q

Friday, August 3, 2012, 3:30 p.m. – 5:00 p.m., Monona Terrace Hall of Ideas Room E

Title: Mastering Math, Not the System

Presenter: Jen Moore

**Description:** You know the scenario: students seem to be doing well on homework, but are performing poorly on exams. With Hawkes, students cannot “cheat the system” to get through assignments. Instead, they are held accountable for mastering the material without relying on learning aids. Students Matter. Success Counts. We will end the presentation with a little fun and raffle off an iPad!

### Maplesoft

Friday, August 3, 2012, 10:30 a.m. – 12:00 p.m., Monona Terrace Hall of Fame

Title: Take Control of Your Placement Testing

Presenter: Louise Krmpotic, Maplesoft

**Description:** The Maple T.A. MAA Placement Test Suite (PTS) combines tests based on current research in education with a powerful, online testing engine to provide the next generation of placement testing. PTS provides a completely flexible platform giving you control over the tests you use and how and when your tests are run. See the difference PTS can make in your placement testing program

## GRADUATE STUDY IN MATHEMATICAL SCIENCES

The Department of Mathematical Sciences offers graduate programs of instruction and research leading to:

- the **Master of Science** degree in mathematics with specializations in pure mathematics, applied mathematics, computational mathematics, and mathematics education;
- the **Master of Science** degree in applied probability and statistics;
- the **Doctor of Philosophy** degree in mathematical sciences.

Fifty full-time graduate students work closely with 40 faculty members who publish research on a regular basis. Active areas of research include algebra, applied mathematics, complex analysis, computational mathematics, differential equations, differential geometry, functional analysis, mathematics education, number theory, and probability and statistics.

The Ph.D. program is nontraditional in that all students develop a significant application of the computer in their area of research and spend at least one semester working at a governmental or industrial research facility prior to completing the degree. The combination of course work, experience, and research enables a graduate of the program to pursue either an academic or a non-academic career.

**Financial Aid:** Most full-time graduate students receive financial aid in the form of teaching assistantships. These positions carry nine-month stipends and include a full tuition waiver. Experienced teaching assistants have the opportunity to teach with full responsibility and an enhanced stipend. Financial aid decisions begin on March 1 and continue until all positions are filled.

## NIU NORTHERN ILLINOIS UNIVERSITY

Northern Illinois University is a large and diverse institution with over 18,000 undergraduates and 6,000 graduate students. The main campus is located in DeKalb, a pleasant residential community of 42,000 located 65 miles west of Chicago via Interstate 88.

### For information, contact

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# MAA MathFest 2012

## SOCIAL EVENTS

### WEDNESDAY, AUGUST 1

#### MAA-PME Student Reception

4:30 p.m. – 5:30 p.m., Hall of Ideas G

#### Face Off!

5:30 p.m. - 6:30 p.m., Hall of Ideas E

**Organizers:** Ken Price and Steve Szydluk, University of Wisconsin, Oshkosh

Are you an undergraduate student looking for a fun and engaging activity at MathFest? Look no further than the Wisconsin Section's own "Face Off!" the mathematics game show. Teams of three to four students compete to answer questions from the broad realm of mathematics. And we really mean broad! If it's mathematical, it's fair game for the game. There is space for up to 10 teams to compete for fame and fun, so form a team and contact the organizers. Schools and REU's are welcome, but even if your organization can't field a full team, let us know and we can form hybrid teams. For more information, visit the "Face Off!" website at [http://www.uwosh.edu/faculty\\_staff/szydluks/faceoff.htm](http://www.uwosh.edu/faculty_staff/szydluks/faceoff.htm). "Face Off!" is also on Facebook at <http://www.tinyurl.com/faceoffgame>.

#### Opening Reception

6:00 p.m. – 7:30 p.m., Exhibit Hall B

The Association is pleased to hold a reception with cash bar for all MathFest participants immediately preceding the Opening Banquet. This event will serve as a Grand Opening of the MathFest Exhibit Hall located on Level 1 of the Monona Terrace Convention Center.

#### Opening Banquet

7:30 p.m. – 9:30 p.m., Exhibit Hall A

**MC:** Paul Zorn, MAA President

**After dinner:** MAA: The Musical<sup>2</sup>!

Bud Brown, Annalisa Crannell, Joyati Debnath, Matt DeLong, Bob Devaney, Frank Farris, Dan Kalman, David Kung, Jenny Quinn, Dave Richeson, Dave Smith, Katherine Socha, Francis Su, Talithia Williams, Paul Zorn, and other members of the MAA Players. Written and directed by Annalisa Crannell, with lyrics by cast members and by Larry Lesser.

### THURSDAY, AUGUST 2

#### Graduate Student Reception

5:30 p.m. – 6:30 p.m., Community Terrace

**Organizers:** Estela A. Gavosto, University of Kansas; James Freeman, Cornell College

Graduate students are invited for some refreshments and to meet several of the invited speakers.

#### Exclusive Screening of "Flatland<sup>2</sup>: Sphereland" Followed by Documentary, "In the Footsteps of Newton"

7:30 p.m. – 9:00 p.m., Ballroom A

Join writer/director Dano Johnson, producer Seth Caplan, and mathematical advisor Thomas Banchoff for this sneak peek into the mathematics of making the new animated film featuring the voices of Kristen Bell, Michael York and Danica McKellar. More information and trailer of the film can be found at <http://www.spherelandthemovie.com>.

### FRIDAY, AUGUST 3

#### MAA-AWM Morning Coffee

8:00 a.m.– 8:25 a.m., Ballroom AB

The Association for Women in Mathematics and the Mathematical Association of America invite you to enjoy coffee and light refreshments before the Etta Z. Falconer Lecture.

#### Pi Mu Epsilon Student Banquet and Awards Ceremony

6:00 p.m. – 7:45 p.m., Monona Terrace

All PME members and their supporters are welcome. See the registration form for more information on this ticketed event.

#### MAA Ice Cream Social and Undergraduate Awards Ceremony

9:00 p.m. – 10:00 p.m., Community Terrace

We will recognize all students who gave talks in the MAA Student Paper Sessions, and award prizes for the best of them. All undergraduate students are invited to attend.

### SATURDAY, AUGUST 4

#### 5K Fun Run & Walk

6:00 a.m. – 9:00 a.m., Lakeside Walkway/Bike Path

5K Fun Run & Walk Waiver - This form is mandatory for all 5K Fun Run & Walk Participants.

#### Silver and Gold Reception and Banquet

6:00 p.m. – 9:00 p.m., Ballroom A&B

**MC:** Eileen Poiani, St. Peter's College

**Speaker:** Gail Burrill, Michigan State University

**Title:** Multiple Perspectives on Knowing and Teaching Mathematics

Knowing and teaching mathematics intersect in very important ways. Paying attention to these intersections can make a difference in what students learn and how they are able to use what they have learned. Some quotes from our colleagues will provide direction and shape the discussion.

# FIFTY SHADES of SUDOKU

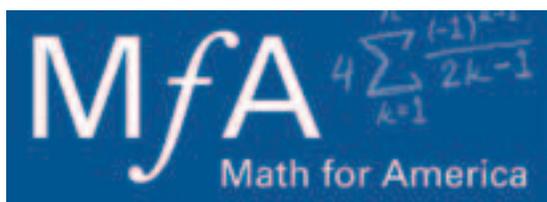
## RULES

Fill in the 10x10 grid so that each row, column, 2x5 block, and grey shaded region contains the numbers 0-9 exactly once.

8		6			1				
	1				4	3			
2				7	6				
			4	5				2	
		9	8				2		5
5		0				4	1		
	2				7	6			
				8	2				9
			9	0				7	
				6			3		8

Thank you to Brainfreeze Puzzles ([www.brainfreezepuzzles.com](http://www.brainfreezepuzzles.com)), Philip Riley and Laura Taalman for providing this years MathFest Sudoku.

THANK YOU TO OUR SPONSORS



MAA MathFest 2012

The Mathematical Association of America would like to thank our 2012 Sponsors for so generously contributing to the success of MathFest.

# 3.7 MILLION

## ASSIGNMENTS MASTERED THIS YEAR



To be exact: Hawkes helped students master 3,764,487 assignments. Our unique mastery learning approach and error-specific feedback are proven to help students be more successful.

**Student success: The only standard that really matters.**



**HAWKES**  
LEARNING  
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2013

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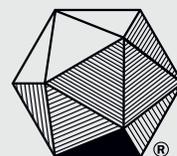
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