Program of the Sessions
New Orleans, Louisiana, January 5–8, 2007

Wednesday, January 3

AMS Short Course on Aspects of Statistical Learning, I
8:00 AM – 4:45 PM

Organizers: 
Cynthia Rudin, Courant Institute, New York University
Miroslav Dudík, Princeton University

8:00AM Registration.
9:00AM Opening remarks by Cynthia Rudin and Miroslav Dudík.
(1) Robert E. Schapire, Princeton University
10:30AM Break.
11:00AM Occam’s Razor and Generalization Bounds.
(2) Cynthia Rudin*, Center for Neural Science and Courant Institute, New York University, and Miroslav Dudík*, Princeton University
2:00PM Exact Learning of Boolean Functions and Finite Automata with Queries.
(3) Lisa Hellerstein, Polytechnic University
3:15PM Break.
3:45PM Panel Discussion.

MAA Short Course on Leonhard Euler: Looking Back after 300 Years, I
8:00 AM – 4:45 PM

Organizers: 
Ed Sandifer, Western Connecticut State University
Robert E. Bradley, Adelphi University

8:00AM Registration.
9:00AM Introductions.
9:15AM A mathematical life in the enlightenment.
(4) Ronald S. Calinger, Catholic University of America
10:30AM Break.
10:45AM Euler and number theory: A study in mathematical invention.
(5) Jeff Suzuki, Brooklyn College

Thursday, January 4

MAA Board of Governors
8:00 AM – 5:00 PM

AMS Short Course on Aspects of Statistical Learning, II
9:00 AM – 1:00 PM

Organizers: 
Cynthia Rudin, Courant Institute, New York University
Miroslav Dudík, Princeton University

9:00AM Online Learning.
(6) Adam Tauman Kalai, Weizmann Institute of Science and Toyota Technological Institute
10:15AM Break.
10:45AM Spectral Methods for Visualization and Analysis of High Dimensional Data.
(7) Enter, stage center: The early drama of hyperbolic functions in the age of Euler.
Janet Barnett, Colorado State University-Pueblo
NOON Question and answer session.

MAA Short Course on Leonhard Euler: Looking Back after 300 Years, II
9:00 AM – 5:00 PM

Organizers: 
Ed Sandifer, Western Connecticut State University
Robert E. Bradley, Adelphi University

9:00AM Questions and answers.

The time limit for each AMS contributed paper in the sessions is ten minutes. The time limit for each MAA contributed paper varies. In the Special Sessions the time limit varies from session to session and within sessions. To maintain the schedule, time limits will be strictly enforced. For papers with more than one author, an asterisk follows the name of the author who plans to present the paper at the meeting. Papers flagged with a solid triangle (►) have been designated by the author as being of possible interest to undergraduate students. Abstracts of papers presented in the sessions at this meeting will be found in Volume 28, Issue 1 of Abstracts of papers presented to the American Mathematical Society, ordered according to the numbers in parentheses following the listings.
Program of the Sessions – Thursday, January 4 (cont’d.)

9:15AM Euler and classical physics.  
(10) Stacy G. Langton, University of San Diego
10:00AM University of California, Davis’s Explore Math Program: Graduate students bringing cutting-edge research into the classroom to share with undergraduate and high school students. Preliminary report.  
Brandy S. Wiegars*, Yuan-Juang Yvonne Lai, Sarah A. Williams and Spyridon Michalakis, University of California, Davis (1023-97-1723)
10:30AM Discussion.

AMS Council

1:30 PM – 10:00 PM

Joint Meetings Registration

3:00 PM – 8:00 PM  
Full registration will be conducted from 3:00 p.m. to 7:00 p.m. Badge/program pickup for those registered in advance will be open until 8:00 p.m.

Friday, January 5

Joint Meetings Registration

7:30 AM – 6:00 PM  
Full registration will be conducted from 7:30 a.m. to 4:00 p.m. Badge/program pickup for those registered in advance will be open until 6:00 p.m.

Employment Center

7:30 AM – 6:00 PM

AMS-MAA Special Session on Math Circles and Similar Programs for Students and Teachers, I

8:00 AM – 10:55 AM  
Organizers: Morris Kalka, Tulane University  
Kathleen O’Hara, Mathematical Sciences Research Institute  
Hugo Rossi, Mathematical Sciences Research Institute  
Tatiana Shubin, San Jose State University  
Zvezdelina E. Stankova, Mills College  
Daniel H. Ullman, George Washington University  
Paul A. Zeitz, University of San Francisco

8:00AM Backyard Mathematics.  
(13) Mark Saul, Bronxville Schools (ret.) (1023-97-704)
8:30AM The Great Conversation.  
(14) Robert Kaplan* and Ellen Kaplan, The Math Circle (1023-97-914)
9:00AM The San Diego Math Circle.  
(15) David Patrick, Art of Problem Solving (1023-97-325)
9:30AM Mathematical Circles (Silicon Valley Experience).  
(16) Tatiana Shubin, San Jose State University (1023-97-705)

AMS-ASL Special Session on Logical Methods in Computational Mathematics, I

8:00 AM – 10:55 AM  
Organizers: Saugata Basu, Georgia Institute of Technology  
Charles N. Delzell, Louisiana State University
8:00AM General logical metatheorems for functional analysis.  
Philipp Gerhardy, Department of Philosophy, Carnegie Mellon University (1023-03-1468)
8:30AM New effective uniformity results in fixed point theory.  
Ulrich Kohlenbach, Darmstadt University of Technology (1023-03-361)
9:00AM Proof mining in CAT(0)-spaces and β-trees.  
Laurentiu Leustean, TU Darmstadt, Germany and Institute of Mathematics “Simion Stoilow” of the Romanian Academy, Bucharest, Romania (1023-03-1261)
9:30AM Model elimination and cut elimination. Preliminary report.  
Grigori Mints, Stanford University (1023-03-79)
10:00AM Phase transitions in logic and combinatorics.  
(22) Andreas Weiermann, Ghent University (1023-03-1102)
Jeffery Zucker, McMaster University, Hamilton, Canada (1023-03-628)

AMS-AWM Special Session on Geometric Group Theory, I

8:00 AM – 10:55 AM  
Organizers: Ruth M. Charney, Brandeis University  
Karen Vogtmann, Cornell University
8:00AM Automorphisms of right-angled groups.  
Adam Piggott* and Mauricio Gutierrez, Tufts University (1023-20-237)
8:30AM Quasi-isometric classification of graph manifolds.  
Jason A. Behrstock*, University of Utah, and Walter D. Neumann, Barnard College, Columbia University (1023-20-136)
9:00AM Dual presentations for Artin groups. Preliminary report.  
Jon McCammond, U C Santa Barbara (1023-20-476)
9:30AM Spaces with nonpositive immersions. Preliminary report.  
Robert W Bell, Michigan State University (1023-20-1164)
10:00AM A geometric perspective on the conjugacy problem in Thompson’s group F. Preliminary report.  
Kai-Uwe Bux* and Dimitriy Sonkin, University of Virginia (1023-20-1088)
Friday, January 5 – Program of the Sessions

AMS Special Session on Knots, 3-Manifolds, and Their Invariants, I

8:00 AM – 10:55 AM

Organizers: Oliver T. Dasbach, Louisiana State University
            Xiaosong Lin, University of California Riverside

8:00 AM
Quantum Teichmüller Theory. Preliminary report.
Charles D Frohman*, The University of Iowa, and
Adam Sikora, The State University of New York at Buffalo (1023-57-1745)

8:30 AM
Nonalternating knots and the Jones polynomial.
Neil R. Nicholson, The University of Iowa (1023-54-31)

9:00 AM
Dessins d’enfant and Link Invariants. Preliminary report.
Neal W. Stoltzfus*, Louisiana State University,
Xiao-Song Lin, UC Riverside, Oliver T. Dasbach,
Louisiana State University, Efstratia Kalfagianni
and David Futer, Michigan State University
(1023-57-1148)

9:30 AM
New Skein modules of three manifolds (with C.Frohman).
Marta Asaeda*, Univ of California Riverside, and
Charlie Frohman, University of Iowa
(1023-57-1591)

10:00 AM
Turaev-Viro Invariants of 3-Manifolds and the Reidemeister torsion.
Charles D Frohman, The University of Iowa, and
Joanna Kania-Bartoszynska*, National Science Foundation
(1023-57-1847)

10:30 AM
Khovanov Homology & Reidemeister Torsion.
Juan Ariel Ortiz-Navarro*, University of Iowa, and
Chris Truman, University of Maryland
(1023-55-1693)

AMS Special Session on Arrangements and Related Topics, I

8:00 AM – 10:50 AM

Organizers: Daniel C. Cohen, Louisiana State University
            Anne V. Shepler, University of North Texas

8:00 AM
A spectral sequence stratification of cohomology jump loci. Preliminary report.
Hal Schenck*, Texas A&M University, and
Graham Denham, University of Western Ontario
(1023-13-518)

8:30 AM
Upper bound on the number of split fibers in a pencil of curves.
Jorge V Pereira, IMPA, and Sergey Yuzvinsky*, University of Oregon
(1023-14-796)

9:00 AM
Resonant weights and critical loci of rational functions. Preliminary report.
Daniel C. Cohen, Louisiana State University,
Graham Denham, University of Western Ontario,
Michael J. Falk*, Northern Arizona University, and
Alexander N. Varchenko, University of North Carolina
(1023-14-1410)

9:30 AM
Resonance: getting past II1.
Graham Denham*, University of Western Ontario, and
Hal Schenck, Texas A&M University
(1023-13-1583)

10:00 AM
Non-finiteness properties of fundamental groups of smooth projective varieties.
Alexandru Dimca, Université de Nice Sophia-Antipolis, Stefan Papadima, Institute of Mathematics of the Romanian Academy, and
Alexander I Suciu*, Northeastern University
(1023-20-712)

10:30 AM
Topological invariants of singular complex hypersurfaces. Preliminary report.
Laurentiu G. Maxim, University of Illinois at Chicago
(1023-55-1006)

AMS Special Session on Coding Theory and Its Applications, I

8:00 AM – 10:55 AM

Organizers: Roxana N. Smarandache, University of Notre Dame and San Diego State University
            Pascal O. Vontobel, Hewlett-Packard Laboratories

8:00 AM
Pseudocodeword weights of codes from expander graphs.
Christine A Kelley, The Fields Institute
(1023-94-1500)

8:30 AM
LDPC Convolutional Codes: What Are They? How Do They Work? Are They Any Good?
Daniel J. Costello, University of Notre Dame and San Diego State University
(1023-94-1236)

9:30 AM
Towards explaining decoding errors for LDPC codes.
Lance C. Pérez and Judy L. Walker*, University of Nebraska
(1023-94-1554)

10:00 AM
A code decomposition theory.
Navin Kashyap, Queen’s University
(1023-68-446)

DUMMY MONTH 2001 NOTICES OF THE AMS 35
AMS Special Session on Cohomology and Representation Theory, I

8:00 AM – 10:50 AM

Organizers: Jon F. Carlson, University of Georgia
Daniel K. Nakano, University of Georgia
Julia Pevtsova, University of Washington

8:00AM
The centralizer of a nilpotent section.
(53) George J. McNinch, Tufts University (1023-22-1152)

8:30AM
On Some Nilpotent Orbits and Desingularizations of Their Closures. Preliminary report.
Terrell L. Hodge*, Western Michigan University (on sabbatical leave 2006-2007 at the University of Virginia), and David C. Murphy, Kalamazoo College (1023-20-884)

9:00AM
Quiver representations with bilinear forms and nilpotent orbits of graded classical Lie algebras. Preliminary report.
Zongzhu Lin*, Kansas State University, and Bangming Deng, Beijing Normal University (1023-20-1656)

9:30AM
Quantum Group Cohomology.
(56) Christopher P. Bendel*, University of Wisconsin-Stout, Daniel K. Nakano, University of Georgia, Brian J. Parshall, University of Virginia, and Cornelius Pillen, University of South Alabama (1023-20-627)

10:00AM
Cohomology formulas, old and new. Preliminary report.
Brian Parshall* and Leonard Scott, University of Virginia (1023-20-904)

10:30AM
Character formulas, old and new.
(58) Leonard Scott* and Brian Parshall, University of Virginia (1023-20-905)

AMS Special Session on Experimental Mathematics in Action, I

8:00 AM – 10:50 AM

Organizers: Victor H. Moll, Tulane University
Tewodros Amdeberhan, Tulane University

8:00AM
Experimental discovery of Apéry-type identities for even zeta values.
Jonathan M. Borwein, Dalhousie University (1023-11-65)

8:30AM
PSLQ Does Functions Too! Preliminary report.
Marc Chamberland, Grinnell College (1023-11-222)

9:00AM
Isodiametric problems for polygons.
(61) Michael J. Mossinghoff, Davidson College (1023-52-100)

9:30AM
Fixed Points of Maps on the Space of Rational Functions.
Edward C. Mosteig, Loyola Marymount University (1023-33-963)

10:00AM
Disturbing the Dyson Conjecture (in a “GOOD” Way).
(63) Andrew V. Sills* and Doron Zeilberger, Rutgers University (1023-05-207)

10:30AM
Computer Algebra for Special Function Inequalities.
(64) Manuel Kauers, RISC-Linz (1023-05-217)

AMS Special Session on Financial Mathematics, I

8:00 AM – 10:55 AM

Organizers: Jean-Pierre Fouque, University of California Santa Barbara
Craig A. Nolder, Florida State University
Knut Solna, University of California Irvine
Thaleia Zariphopoulou, University of Texas Austin

8:00AM
Indifference prices and convex risk measures in Orlicz spaces.
Marco Frittelli, Universitá degli Studi di Milano, Italy (1023-60-614)

9:00AM
Stability of utility maximization.
Gordan Zitkovic*, University of Texas at Austin, and Kasper Larsen, Carnegie Mellon University (1023-91-659)

9:30AM
Correspondence between Lifetime Minimum Wealth and Utility of Consumption.
Eran Bayraktar, University of Michigan (1023-60-1396)

10:00AM
Asymptotic analysis of utility-based hedging strategies for small number of contingent claims.
Dmitry Kramkov, Carnegie Mellon University, and Mihai Sirbu*, Columbia University (1023-90-581)

10:30AM
Dynamic monetary risk measures in discrete time.
Patrick Cheridito*, Princeton University, and Michael Kupper, Technical University Vienna (1023-91-828)

AMS Session on Partial Differential Equations, I

8:00 AM – 10:55 AM

8:00AM
On Fay Identity.
(70) Jordan P Michev, SUNY, Suffolk CC College (1023-35-1013)

8:15AM
A simple direct approach for constructing single solitons of nonlinear wave equations. Preliminary report.
Guoping Zhang* and Zhijun Qiao, University of Texas-Pan American (1023-35-1136)

8:30AM
Dilya E. Vernerey*, Salisbury University (on leave at Northwestern University), Esteban Urdailes and Vladimir A. Volpert, Northwestern University (1023-35-1329)

8:45AM
On complete rotationally invariant gradient Ricci shrinking solitons.
Brett L Kotschwar, UC San Diego (1023-35-1330)

9:00AM
The two-point boundary problem for the Euler-Poisson system.
Wilfrid Gangbo, Truyen Nguyen and Adrian Tudorascu*, Georgia Institute of Technology (1023-35-1333)

9:15AM
 Forced Two Layer Beta-Plane Quasi-Geostrophic Flow, Part II: Time and Space Analyticity.
Constantin Onica*, Indiana University, and Lee R. Panetta, Texas A&M University (1023-35-1483)
### AMS Session on Algebra and Number Theory, I

**Friday, January 5 - Program of the Sessions**

8:00 AM – 10:55 AM

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<th>Time</th>
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<tr>
<td>8:00 AM</td>
<td>Nematic liquid crystals and harmonic maps on polyhedral domains: theory and applications.</td>
<td>A. Majumdar, University of Oxford, J. M. Robbins, University of Bristol, and Maxim Zyskin*, University of Oxford (1023-35-1517)</td>
</tr>
<tr>
<td>9:45 AM</td>
<td>A continuous approach to the lightning discharge. Preliminary report.</td>
<td>Breyza Caliskan Aslan* and William W Hager, University of Florida (1023-35-1521)</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Grid transformation numerical methods for laser beam propagation in nonhomogeneous media. Preliminary report.</td>
<td>James W. Rogers* and Qin Sheng, Baylor University (1023-35-1531)</td>
</tr>
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<td>10:30 AM</td>
<td>On Selmer groups in a family of elliptic curves with reducible 2- and 3-torsion and 3-ranks of class groups of quadratic number fields. Preliminary report.</td>
<td>James M. Mailhot, Columbus, Ohio (1023-11-1291)</td>
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**AMS Session on Algebra and Group Theory, I**

8:00 AM – 10:40 AM

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<td>8:00 AM</td>
<td>Eigenvalue Comparisons for a Class of Boundary Value Problems of Second Order Difference Equations. Preliminary report.</td>
<td>Jun Ji* and Bo Yang, Kennesaw State University (1023-15-1060)</td>
</tr>
<tr>
<td>9:15 AM</td>
<td>On novel ways to invert a matrix. Preliminary report.</td>
<td>Aaron Lauve* and Christophe Reutenauer, LaCIM, University of Quebec at Montreal (1023-08-96)</td>
</tr>
<tr>
<td>9:30 AM</td>
<td>Noncommutative Vieta’s Theorem and Graph Associated Algebras.</td>
<td>David Nacin, William Paterson University (1023-15-1274)</td>
</tr>
<tr>
<td>9:45 AM</td>
<td>Strongly Clean Rings and a Generalized Fitting’s Lemma.</td>
<td>Alexander J. Diesl, Vassar College (1023-16-1524)</td>
</tr>
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<td>10:00 AM</td>
<td>Rings generated by their units.</td>
<td>Alexander J. Diesl, Vassar College (1023-16-1524)</td>
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<tr>
<td>10:15 AM</td>
<td>Stable endomorphisms in characteristic two for the symmetric group S₄.</td>
<td>Pablo Tarazaga, Texas A&amp;M University (1023-15-840)</td>
</tr>
<tr>
<td>10:30 AM</td>
<td>On pairs of matrices generating matrix rings and their presentations.</td>
<td>Bogdan Petrenko*, Texas A&amp;M University, and Said Sidki, University of Brasilia (1023-16-334)</td>
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**MAA Session on College Algebra: Concepts, Data, and Models, I**

8:00 AM – 10:55 AM

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<td>10:00 AM</td>
<td>Partition Identities Arising from Ramanujan’s Modular Equations and Theta Functions. Preliminary report.</td>
<td>Nayandeep Deka Baruah* and Bruce C. Berndt, University of Illinois at Urbana-Champaign (1023-11-143)</td>
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### MAA Session on College Algebra: Concepts, Data, and Models, I

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<td>Domain Theory and Invariants of Polynomial Maps. Preliminary report.</td>
<td>Maxim Zyskin, University of Nigeria, Yola. (1023-35-713)</td>
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<td>8:30 AM</td>
<td>On novel ways to invert a matrix. Preliminary report.</td>
<td>Aaron Lauve* and Christophe Reutenauer, LaCIM, University of Quebec at Montreal (1023-08-96)</td>
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<td>8:45 AM</td>
<td>A New Key Exchange Primitive. Preliminary report.</td>
<td>Yesem Kurt, Pomona College (1023-08-928)</td>
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<td>9:00 AM</td>
<td>Summing prime reciprocals in an arithmetic progression.</td>
<td>Dominic W Klyve, Dartmouth College (1023-11-1009)</td>
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<td>On Selmer groups in a family of elliptic curves with reducible 2- and 3-torsion and 3-ranks of class groups of quadratic number fields. Preliminary report.</td>
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**Organizers:**

- Florence S. Gordon, New York Institute of Technology
- Mary Robinson, University of New Mexico Valencia Campus
- Norma Agras, Miami Dade Community College
### MAA Session on Content Courses for the Mathematical Education of Middle School Teachers, I

**Program of the Sessions – Friday, January 5 (cont’d.)**

#### MAA Session on Euler in the Classroom

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<td>8:00AM</td>
<td>Euler Enriches Summer High School Program</td>
<td>Julia Darby Head and G. Brock Williams, Texas Tech University</td>
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<td>8:15AM</td>
<td>Mathematics of Euler—Euler Line and Euler's Formula for Polyhedra</td>
<td>Jim Fulmer, University of Arkansas at Little Rock</td>
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<td>8:30AM</td>
<td>Investigating Euler's Polyhedral Formula Using Original Sources</td>
<td>Lee Stempkoski, Adelphi University</td>
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<td>Homer S. White, Georgetown College, Kentucky</td>
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<td>Jospeh Darbes' 1778 portraits of Euler: their provenance, the method of construction and reproduction.</td>
<td>D. Florence Fasanelli, American Association for the Advancement of Science</td>
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<td>Napier's e. Preliminary report</td>
<td>Amy E. Shell-Gellasch, Pacific Lutheran University</td>
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<td>E29, or Pell's equation in the number theory classroom</td>
<td>Daniel E. Otero, Xavier University</td>
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<td>Robert E. Bradley, Adelphi University</td>
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<td>10:00AM</td>
<td>Functions vs. Equations in Euler’s Work</td>
<td>Bruce S Burdick, Roger Williams University</td>
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<td>10:15AM</td>
<td>Euler Angles, Rotation Matrices, Euler’s Identity and Quaternions</td>
<td>Paul R Bouthelier, University of Pittsburgh-Titusville</td>
</tr>
<tr>
<td>10:30AM</td>
<td>Euler's Method for Differential Equations</td>
<td>Dick Jardine, Keene State College</td>
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<td>Discrete Dynamical Systems as a College Algebra Thread</td>
<td>Rich West, Francis Marion University</td>
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<td>8:20AM</td>
<td>An Active Classroom Using Modeling</td>
<td>John C Maceli* and Eric Robinson, Ithaca College</td>
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<td>8:40AM</td>
<td>CRAFTY’s College Algebra: Guidelines for the Nation</td>
<td>Norma M Agras, Miami Dade College</td>
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<td>9:00AM</td>
<td>Modeling based College Algebra Pilot Study</td>
<td>Bill Haver, Virginia Commonwealth University</td>
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<td>9:20AM</td>
<td>Toward a Lean and Lively Algebra</td>
<td>Barry Brunson, Western Kentucky University</td>
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<td>9:40AM</td>
<td>Learning About Algebraic Functions Using Data Models</td>
<td>Murray H. Siegel, SC GSSM</td>
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<td>10:00AM</td>
<td>A Departure from College Algebra</td>
<td>D. Scott Dillery, Lindsey Wilson College</td>
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<td>10:20AM</td>
<td>Integrating College Algebra and Statistics to Meet Students’ and Other Disciplines’ Needs.</td>
<td>Sheldon P. Gordon, Farmingdale State University of New York</td>
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<tr>
<td>10:40AM</td>
<td>A Report on One College’s Efforts to re-structure the mathematics courses below Calculus.</td>
<td>Mercedes A. McGowen, William Rainey Harper College</td>
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<tr>
<td>10:15AM</td>
<td>Euler Angles, Rotation Matrices, Euler’s Identity and Quaternions</td>
<td>Paul R Bouthelier, University of Pittsburgh-Titusville</td>
</tr>
<tr>
<td>10:30AM</td>
<td>Euler’s Method for Differential Equations</td>
<td>Dick Jardine, Keene State College</td>
</tr>
</tbody>
</table>

### MAA Session on Content Courses for the Mathematical Education of Middle School Teachers, I

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Organizer(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00AM</td>
<td>Discrete Dynamical Systems as a College Algebra Thread</td>
<td>Rich West, Francis Marion University</td>
</tr>
<tr>
<td>8:20AM</td>
<td>An Active Classroom Using Modeling</td>
<td>John C Maceli* and Eric Robinson, Ithaca College</td>
</tr>
<tr>
<td>8:40AM</td>
<td>CRAFTY’s College Algebra: Guidelines for the Nation</td>
<td>Norma M Agras, Miami Dade College</td>
</tr>
<tr>
<td>9:00AM</td>
<td>Modeling based College Algebra Pilot Study</td>
<td>Bill Haver, Virginia Commonwealth University</td>
</tr>
<tr>
<td>9:20AM</td>
<td>Toward a Lean and Lively Algebra</td>
<td>Barry Brunson, Western Kentucky University</td>
</tr>
<tr>
<td>9:40AM</td>
<td>Learning About Algebraic Functions Using Data Models</td>
<td>Murray H. Siegel, SC GSSM</td>
</tr>
<tr>
<td>10:00AM</td>
<td>A Departure from College Algebra</td>
<td>D. Scott Dillery, Lindsey Wilson College</td>
</tr>
<tr>
<td>10:20AM</td>
<td>Integrating College Algebra and Statistics to Meet Students’ and Other Disciplines’ Needs.</td>
<td>Sheldon P. Gordon, Farmingdale State University of New York</td>
</tr>
<tr>
<td>10:40AM</td>
<td>A Report on One College’s Efforts to re-structure the mathematics courses below Calculus.</td>
<td>Mercedes A. McGowen, William Rainey Harper College</td>
</tr>
</tbody>
</table>
Friday, January 5 – Program of the Sessions

MAA Session on Integrating Mathematics and Biology in Undergraduate Education, I

8:00 AM – 10:55 AM

Organizers: Glenn W. Ledder, University of Nebraska-Lincoln Yajun Yang, Farmingdale State University of New York Jack Bookman, Duke University James P. Fulton, Suffolk County Community College

8:00AM A Bridge Course to Prepare Students for a Biotechnology Program. Preliminary report.
Mary R. Parker, Austin Community College
(1023-K1-1657)

8:20AM From Edge to Center: Rethinking a Math/Bio Course.
Meredith L. Greer, Bates College (1023-K1-1112)

8:40AM An Integrated Mathematics Course for Biology Students. Preliminary report.
Patti Frazer Lock*, St. Lawrence University, Michael Caplan, Yale Medical School, Dan Flath, Macalaster College, and Jeff Tecosky-Feldman, Haverford College (1023-K1-1365)

9:00AM Using the Scientific Method to Integrate Biology into a Precalculus Course.
James P Fulton* and Linda Sabatino, Suffolk Community College (1023-K1-1632)

9:20AM Get Rhythm, If You Get to Choose!
Mike Martin, Johnson County Community College (1023-K1-629)

Jennifer Wilson, Eugene Lang College, the New School for Liberal Arts (1023-K1-1665)

10:00AM An Undergraduate Course in Biomathematics with an Accompanying Textbook.
Raina S. Robeva*, Sweet Briar College, and Michael L. Johnson, University of Virginia School of Medicine (1023-K1-1575)

10:20AM Biology, Differential Equations, and Learning to Read the Research.
Thomas W Judson, Harvard University (1023-K1-175)

10:40AM Mathematical Biology in the Short Term: A Mini Course for a Summer Program Angella Calogers, Occidental College.
Angela Gallegos, Occidental College, Los Angeles, CA (1023-K1-1875)

MAA Session on Teaching Mathematics Courses Online

8:00 AM – 10:55 AM

Organizers: Cheryl Olsen, Shippensburg University Kate McGivney, Shippensburg University

8:00AM Teaching developmental mathematics with coursecompass.com. Preliminary report.
Katarzyna Potocka* and Pangyen Weng, Ramapo College of New Jersey (1023-Q5-541)

8:20AM On-Line Calculus Courses At Valparaiso University.
Kenneth H Luther, Valparaiso University (1023-Q5-573)

Brian H Felkel, Appalachian State University (1023-Q5-1215)

9:00AM Evolution of a Long Distance Education Course for In-Service Middle School Math Teachers. Preliminary report.
Heidi A. Feller, University of Nebraska-Lincoln (1023-Q5-656)

9:20AM Using Camtasia Studio to Teach Mathematics Online.
Jason A Aubrey, University of Missouri - Columbia (1023-Q5-1881)

9:40AM Integrating Graphing Calculator Emulator Software into Live Webcasts.
Chris Oehrlein, Oklahoma City Community College (1023-Q5-1823)

10:00AM Online Class Experience in Mathematics at the University of Mississippi. Preliminary report.
Semail Ulgen Yildirim*, Grand Valley State University, and Robert Hunt, University of Mississippi (1023-Q5-1774)

10:20AM Teaching Mathematics online: The Park University experience.
Aldo R. Maldonado, Park University (1023-Q5-266)

10:40AM Full Speed Ahead with a Tablet PC. Preliminary report.
Denise J LeGrand, University of Arkansas at Little Rock (1023-Q5-183)

MAA Session on Use of Technology in Abstract Algebra and Number Theory

8:00 AM – 10:55 AM

Organizers: Byungchul Cha, Hendrix College Bo-Hae Im, Chung-Ang University

8:00AM Laboratory Experiences in Group Theory.
Ellen J. Maycock, American Mathematical Society (1023-S1-1292)

Don Spickler, Salisbury University (1023-S1-1342)

8:30AM Using Pascal’s Triangle modulo p to visualize the Lucas Correspondence Theorem. Preliminary report.
Kurt E Ludwick, Salisbury University (1023-S1-1628)

8:45AM Flash Tools for Finite Groups.
James E. Hamblin, Shippensburg University (1023-S1-669)

9:00AM Teaching Abstract Algebra Using the Software CAP.
Julianne G. Rainbolt, Saint Louis University (1023-S1-867)

9:15AM Using XGAP to explore the structure of groups.
Russell D. Blyth, Saint Louis University (1023-S1-723)

9:30AM Visualizing Group Theory with Group Explorer.
Nathan C. Carter, Bentley College (1023-S1-668)

9:45AM Tell Me What You Can About A Group Of Order n.
Mike Krebs, Cal State LA (1023-S1-432)

10:00AM An inquiry-based number theory course.
John Jones*, Arizona State University, and Jeff Holt, University of Virginia (1023-S1-526)

10:15AM Using PARI/GP in a Number Theory Class.
Benjamin L. Levitt, California State University, Chico (1023-S1-1620)

10:30AM Computational Group Theory and Symmetry.
Jeffrey W Clark, Elon University (1023-S1-211)
Program of the Sessions – Friday, January 5 (cont’d.)

MAA General Contributed Paper Session, I

8:00 AM – 10:55 AM

Organizers: Eric S. Marland, Appalachian State University
Jay A. Malmstrom, Oklahoma City Community College

8:00 AM Mathematical modeling of ferro-antiferromagnet (F-AF) exchange coupled systems.
Congxiao Liu*, Min Sun, Department of Mathematics and MINT Center, The University of Alabama, and Hideo Fujiiwa, Department of Physics and MINT Center, The University of Alabama (1023-Z1-608)

8:15 AM Put-call parity in the classroom.
Maryam Vulis, Forest Hills, New York (1023-Z1-1017)

8:30 AM Labs on Public Key Cryptograph and Subgroups of Sl using technologies.
Heakyung Lee, Winthrop University (1023-Z1-940)

Manuel J. Sanders, University of South Carolina at Beaufort (1023-Z1-831)

9:00 AM Some of My Favorite Calculus Homework Problems.
Fred Worth, Henderson State University (1023-Z1-370)

9:15 AM Some Calculus 2 Students Seem to Prefer Procedural Approaches to Exercises over Conceptual Ones.
Mary D Shepherd, Northwest Missouri State University (1023-Z1-1320)

9:30 AM Break.

Raymond N Greenwell* and Stanley Kertzner, Hofstra University (1023-Z1-126)

10:00 AM Innovations in teaching a rings first abstract algebra course.
M. Chakrabarti, Grand Valley State University (1023-Z1-1821)

10:15 AM The review of relevant mathematical content for the teaching of middle and secondary mathematics via a methods course: An integrated approach. Preliminary report.
Dante A Tawfeeq, Adelphi University (1023-Z1-634)

10:30 AM An Experimental Study on the Implementation of Online Resources in Pre-Calculus Algebra.
Tasha Thrower*, Jan Case, Audria White and Fred Kelley, Jacksonville State University (1023-Z1-482)

10:45 AM Mobile-Technology and the College Math Core Curriculum.
Marilyn Reba, Clemson University (1023-Z1-358)

SIAM Minisymposium on Mathematics and Materials Science

8:00 AM – 10:55 AM

Organizer: Robert P. Lipton, Louisiana State University

8:00 AM Modeling the Self-Assembly of Quantum Dots in Thin Solid Films.
Margo S. Levine*, Alexander A. Golovin, Stephen H. Davis, Northwestern University, and Peter W Voorhees, Department of Materials Science, Northwestern University (1023-74-1257)

8:30 AM Phase of biaxial liquid crystal polymers and particle suspensions in simple flows. Preliminary report.
Saroth Sircar* and Qi Wang, Florida State University (1023-82-1015)

9:00 AM Estimates for the principal Dirichlet eigenvalue of anisotropic elliptic operator on a ball and their applications.
Steve Rosencrans*, Xuefeng Wang, Bill Winter, Tulane University, and Shan Zhao, University of California Irvine (1023-82-1289)

9:30 AM Solute transport in porous media.
Guillermo H Goldshtein, Georgia Tech (1023-35-1376)

10:00 AM Nano-rod composites: a flow strategy to control anisotropic percolation.
M Gregory Forest*, University of North Carolina at Chapel Hill, Xiaoyu Zheng, Kent State University, Richard Vaia, Air Force Research Laboratory, Michael Arlen, University of North Carolina at Chapel Hill, Ruizhi Zhou, Old Dominion University, Qi Wang, Florida State University, and Robert Lipton, Louisiana State University (1023-76-1794)

10:30 AM Stability of the normal state of superconductors in the presence of electric currents.
Yaniv Almog, Louisiana State University (1023-82-1288)

SIAM Minisymposium on Phyllotaxis

8:00 AM – 10:55 AM

Organizers: Pau Atela, Smith College
Christophe Gole, Smith College

8:00 AM Mathematical techniques in Phyllotaxis.
Scott G. Hotton, Harvard University - Department of Organismic and Evolutionary Biology (1023-92-1347)

10:30 AM Mathematical models of likely mechanisms for phyllotaxis: Polarized auxin transport, cell growth, and dynamic connectivity.
Eric Mjolsness*, Departments of Computer Science and Mathematics, University of California Irvine, Marcus Heisler, Division of Biology, California Institute of Technology, Henrik Jonsson, Computational Biology & Biological Physics Group, Lund University, Elliot Meyerowitz and Bruce Shapiro, Division of Biology, California Institute of Technology (1023-92-1820)

9:00 AM Modeling phyllotaxis: from molecules to patterns.
Richard S. Smith, University of Calgary, Soazig Guyomarc’h, Therese Mandel, Didier Reinhardt, University of Berne, Adam Runions, University of Calgary, Cris Kuhlemeyer, University of Berne, and Przemyslaw Prusinkiewicz*, University of Calgary (1023-92-1890)

9:30 AM An Amplitude-Equation Approach to Phyllotaxis.
Alan C Newell, University of Arizona, and Patrick D Shipman*, University of Maryland (1023-92-1563)

10:00 AM New Geometric Concepts for Phyllotaxis.
Pau Atela*, Smith College, Jacques Dumais, Harvard University, Christophe Gole, Smith College, and Scott Hotton, Harvard University (1023-92-1269)

10:30 AM A new characterization of irregular phyllotactic patterns.
Stephane Douady, Ecole Normale Superieure, Paris (1023-92-1644)
AMS Special Session on Recent Developments in Analysis and Numerics of Geophysical Fluid Dynamics Problems, I

8:30 AM – 10:55 AM
Organizers: Jie Shen, Purdue University
Shouhong Wang, Indiana University

8:30AM (188)
J Jerry L Bona, University of Illinois at Chicago
(1023-86-1827)

9:00AM (189)
The 2D surface quasi-geostrophic equation with supercritical dissipation. Preliminary report.
Ming-Chih Lai, Yu-Hou Tseng, National Chiao Tung University, Taiwan, and Jiahong Wu*, Oklahoma State University (1023-76-639)

9:30AM (190)
Two-dimensional infinite Prandtl number convection: Structure of bifurcated solutions.
Jungho Park, Indiana University, Bloomington (1023-76-1549)

10:00AM (191)
Modeling and simulation of multiphase incompressible flows using an energetic variational phase field model.
Jie Shen, Purdue University (1023-76-1549)

10:30AM (192)
Finite-Element-based Faedo-Galerkin weak solutions to the Navier–Stokes equations with Dirichlet boundary conditions are suitable.
Jean-Luc Guermond, Texas A&M University (1023-65-1919)

MAA Session on Innovative and Effective Ways to Teach Linear Algebra, I

8:40 AM – 10:55 AM
Organizers: David Strong, Pepperdine University
Gilbert Strang, Massachusetts Institute of Technology

8:40AM (193)
Using Concept Maps to look at linear algebra understandings.
David E Meel, Bowling Green State University
(1023-J1-850)

9:00AM (194)
Michael Huber, Muhlenberg College (1023-J1-180)

9:20AM Break.

9:40AM (195)
Using DERIVE to Emphasize Understanding in Linear Algebra.
Lisa Townsley, Benedictine University
(1023-J1-839)

10:00AM (196)
Using Maple to See the Solution to the Least Squares Problem. Preliminary report.
Vicky Williams Klima, Appalachian State University
(1023-J1-176)

10:20AM (197)
Quantum Mechanics: A Different Spin on Linear Algebra.
Itai Seggev, University of Mississippi (1023-J1-162)

10:40AM (198)
 Löwdin Orthogonalization - A Natural Supplement to Gram-Schmidt.
Scott F Beaver, Western Oregon University
(1023-J1-597)

MAA Minicourse #12: Part A

9:00 AM – 11:00 AM
Combinatorially thinking.
Organizers: Arthur T. Benjamin, Harvey Mudd College

MAA Minicourse #1: Part A

9:00 AM – 11:00 AM
Introduction to the mathematics of modern cryptography.
Organizers: Colm K. Mulcahy, Spelman College
Jeffrey Ehme, Spelman College

MAA Minicourse #7: Part A

9:00 AM – 11:00 AM
Directing undergraduate research.
Organizer: Aparna W. Higgins, University of Dayton

AMS Special Presentation

9:30 AM – 10:55 AM
Report on the findings of the 2005 CBMS survey of undergraduate mathematical and statistical sciences in the U.S.
Moderator: James W. Maxwell, AMS
Presenters: David Lutzer, College of William and Mary
Ellen J. Kirkman, Wake Forest University
Stephen B. Rodi, Austin Community College

MAA-Project NExT-YMN Panel Discussion

9:30 AM – 10:50 AM
Keeping your research alive.
Organizers: Brian Birgen, Wartburg College
William M. Higdon, University of Indianapolis
James E. Hamblin, Shippensburg University
Panelists: Jean Bee Chan, Sonoma State University
Michael J. Dorff, Brigham Young University
Asamoah Nkwanta, Morgan State University

MAA Minicourse #12: Part A

9:30 AM – 10:50 AM
National Science Foundation programs supporting learning and teaching in the mathematical sciences.
Organizers: Camille McKayle, NSF
Lloyd E. Douglas, NSF
Elizabeth J. Teles, NSF
Lee L. Zia, NSF
David C. Royster, NSF
Program of the Sessions – Friday, January 5 (cont’d.)

SIGMAA on the Teaching of Advanced High School Mathematics Panel Discussion

9:30 AM – 10:50 AM
What mathematical content should future mathematics majors learn while in high school?
Organizer: Daniel J. Teague, North Carolina School of Science and Mathematics
Panelists: Benjamin G. Klein, Davidson College
Susan S. Wildstrom, Walt Whitman High School
Daniel J. Teague

AMS Special Presentation

10:00 AM – 10:55 AM
Who wants to be a mathematician.
Organizers: Michael A. Breen, AMS
William T. Butterworth, DePaul University

AMS Invited Address

10:05 AM – 10:55 AM
(199) Diffraction by edges.
Andras Vasy, Stanford University (1023-35-05)

AMS-MAA Invited Address

11:10 AM – NOON
(200) Dynamics of integer sets.
Bryna R. Kra, Northwestern University (1023-37-13)

Exhibits and Book Sales

12:15 PM – 5:30 PM

AMS Colloquium Lecture: Lecture I

1:00 PM – 2:00 PM
(201) Limit shapes, real and imagined, I: Random surfaces around us.
Andrei Okounkov, Princeton University (1023-60-02)

MAA Invited Address

2:15 PM – 3:05 PM
(202) Forming committees.
Penny Haxell, University of Waterloo (1023-A0-19)

AMS-MAA Special Session on Math Circles and Similar Programs for Students and Teachers, II

2:15 PM – 7:00 PM
Organizers: Morris Kalka, Tulane University
Hugo Rossi, Mathematical Sciences Research Institute
Tatiana Shubin, San Jose State University
Zvezdelina E. Stankova, Mills College
Daniel H. Ullman, George Washington University
Paul A. Zeitz, University of San Francisco

2:15PM (203) Experience with Teaching Algorithmics in a Public School Setting.
Anna Charny, Advanced Math and Science Academy Charter School (1023-97-706)

2:40PM (204) The San Francisco Math Circle: A teacher-centered math circle for underrepresented student populations.
Paul A Zeitz, University of San Francisco (1023-97-1222)

3:05PM (205) Seeking Points of Intersection: High-School Curricula vs. Math Circle Goals.
James S Tanton, St. Mark’s Institute of Mathematics (1023-97-1007)

David C. Kelly, Hampshire College (1023-97-763)

3:50PM (207) Canada/USA Mathcamp: a summer math program for talented high-school students.
Mira Bernstein, Wellesley College (1023-97-1178)

4:10PM (208) SEE-Math · Summer Educational Enrichment at Texas A&M for Middle School Students.
Philip B Yasskin, Texas A&M University (1023-97-235)

4:30PM (209) Circle in a Box.
Sam Vandervelde, Stanford University (1023-97-49)

4:55PM (210) A Math Circle sponsored by Brigham Young University. Preliminary report.
David G. Wright, Brigham Young University (1023-97-185)

5:20PM (211) 10 years of the Berkeley Math Circle.

Isaac L. Greenspan, Illinois Mathematics and Science Academy (1023-97-791)

6:15PM (213) Panel discussion moderated by Mark Saul.

AMS-ASL Special Session on Logical Methods in Computational Mathematics, II

2:15 PM – 4:40 PM
Organizers: Saugata Basu, Georgia Institute of Technology
Charles N. Delzell, Louisiana State University

2:15PM (214) Managing an NP-Complete Problem.
Andrew G. Borden, St. Mary’s University, San Antonio, Texas (1023-97-321)

2:45PM (215) Computational power of bounded arithmetic from the predicative viewpoint.
Sam Buss, University of California, San Diego (1023-97-604)

3:15PM (216) Mystery of Point Charges.
Andrei Gabrielov*, Purdue University, Dimitri Novikov, The Weizmann Institute of Science, and Boris Shapiro, Stockholm University (1023-14-756)

3:45PM (217) Constructing expansions of the real field by restricted transcendental analytic functions with decidable theories. Preliminary report.
Daniel J. Miller, Emporia State University (1023-97-88)

4:15PM (218) Quantitative results in o-minimal topology.
Thierry Zell, Georgia State University (1023-97-153)
### AMS-AWM Special Session on Geometric Group Theory, II

**2:15 PM – 6:10 PM**

Organizers: *Ruth M. Charney*, Brandeis University  
*Karen Vogtmann*, Cornell University

- **2:15PM**  
  Systolic spaces: Minimal surfaces, Flat Torus  
  *Tadeusz Januszkiewicz*, Ohio State University (1023-20-297)

- **2:15PM**  
  Theorem and related results, according to Tomasz Elsner.

- **2:15PM**  
  *Tadeusz Januszkiewicz*, Ohio State University (1023-20-297)

- **2:15PM**  
  **(218)**

- **2:15PM**  
  **(219)**

- **2:15PM**  
  **(220)**

- **2:15PM**  
  **(221)**

- **2:15PM**  
  **(222)**

- **2:15PM**  
  **(223)**

- **2:15PM**  
  **(224)**

- **2:15PM**  
  **(225)**

### AMS Special Session on Knots, 3-Manifolds, and Their Invariants, II

**2:15 PM – 6:10 PM**

Organizers: *Oliver T. Dasbach*, Louisiana State University  
*Xiao-Song Lin*, University of California Riverside

- **2:15PM**  
  **(234)**

- **2:15PM**  
  **(235)**

- **2:15PM**  
  **(236)**

- **2:15PM**  
  **(237)**

### AMS Special Session on Fixed Point Theory, Dynamics, and Group Theory, II

**2:15 PM – 6:10 PM**

Organizers: *Michael R. Kelly*, Loyola University Chicago  
*Peter N. Wong*, Bates College

- **2:15PM**  
  Self-coincidences of mappings between spheres.  
  Preliminary report.  
  *Duane Randall*, Loyola University New Orleans (1023-55-1273)

- **2:15PM**  
  The uniqueness of the coincidence index on orientable differentiable manifolds.  
  *P. Christopher Staecker*, Messiah College (1023-57-1220)

- **2:15PM**  
  Redefinest classes for automorphisms of Nilpotent groups and applications for Fixed Point Theory.  
  Preliminary report.  
  *Daciberg Lima Goncalves*, University of Sao Paulo, and *Peter Wong*, Bates College (1023-55-179)

- **2:15PM**  
  Fixed points on model solvmanifold pairs.  
  *Aaron A Reite*, California State University Fresno (1023-55-870)

- **2:15PM**  
  Estimating Nielsen numbers on wedge product spaces.  
  *Nirattaya Khamsesman*, University of Connecticut, Storrs, and *Seungwon Kim*, University of California, Los Angeles (1023-14-594)

**4:45PM**  
Fixed point bundles of fiber-preserving maps.  
Preliminary report.  
*Christina L Soderlund*, California Lutheran University, and *Robert F Brown*, University of California, Los Angeles (1023-55-1311)

**5:15PM**  
On explosion points and fixed points.  
*Mohammad Abry*, University of British Columbia, and *Jan van Mill*, Vrije Universiteit Amsterdam (1023-54-30)

**5:45PM**  
Antipodal-like theorems and symmetric continua in euclidean spaces.  
*Jan P. Boronski*, Auburn University, and *Marian Turzanski*, Cardinal Stefan Wyszynski University (1023-26-484)

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**Friday, January 5 – Program of the Sessions**

**DUMMY MONTH 2001**

**NOTICES OF THE AMS**
AMS Special Session on Recent Developments in Analysis and Numerics of Geophysical Fluid Dynamics Problems, II

2:15 PM – 5:40 PM

Organizers: Jie Shen, Purdue University
Shouhong Wang, Indiana University

2:15 PM
A Dyadic Model for the Inviscid Fluid Equations.
Susan Friedlander, University of Illinois-Chicago
(1023-35-342)

2:45 PM
Exact solutions of a spherical model for the energy-entropy theory of a barotropic fluid coupled to rotating massive sphere.
Chjan C Lim, Rensselaer Polytechnic Institute
(1023-86-312)

3:15 PM
Nonlinear local Lyapunov exponent and predictability.
Jianping Li* and Ruiqiang Ding, LASG, Institute of Atmospheric Physics, Chinese Academy of Sciences
(1023-37-202)

3:45 PM
A Finite volume implicit Euler scheme for the linearized Shallow Water equations: stability and convergence.
Du X Pham*, The Institute for Scientific Computing and Applied Mathematics, Indiana University, and Karine Adamy, Numerique, Universite Paris-Sud
(1023-65-346)

4:15 PM
The Global Attractor for the Solutions to the 3D Viscous Primitive Equations in H^2 space.
Ning Ju, Oklahoma State University
(1023-35-1141)

4:45 PM
Large Prandtl Number Behavior of the Boussinesq System of Rayleigh-Benard Convection.
Xiaoming Wang, Florida State University
(1023-76-360)

5:15 PM
Stability and transitions for the double-diffusive convections.
Chun-Hsiung Hsia, University of Illinois at Chicago, Tian Ma, Sichuan University, and Shouhong Wang*, Indiana University
(1023-86-1510)

AMS Special Session on Coding Theory and Its Applications, II

2:15 PM – 6:10 PM

Organizers: Roxana S. Marandache, University of Notre Dame and San Diego State University
Pascal O. Vontobel, Hewlett-Packard Laboratories

2:15 PM
Discussion.

2:45 PM
Skew Hadamard Designs and Their Codes.
Jon-Lark Kim, University of Louisville
(1023-94-1868)

3:15 PM
Rediscovering Our Roots: Coding Theory and Reed-Solomon Codes.
Henry D Pfister, Texas A&M University
(1023-94-1868)

3:45 PM
Algebraic Soft Decision Decoding of Reed Solomon Codes using Bit-level Soft Information.
Jing Jiang and Krishna R Narayanan*, Texas A&M University
(1023-94-1868)

4:15 PM
Break.

4:45 PM
On the generalized reversal distance.
Olgica Milenkovic, University of Colorado, Boulder
(1023-94-1868)

5:15 PM
String Reconstruction: Putting right what once went wrong.
Sampath Kannan and Andrew McGregor*, University of Pennsylvania
(1023-94-1868)

5:45 PM
Discussion.

AMS Special Session on Cohomology and Representation Theory, II

2:15 PM – 6:05 PM

Organizers: Jon F. Carlson, University of Georgia
Daniel K. Nakano, University of Georgia
Julia Pevtsova, University of Washington

2:15 PM
Special bases via positive characteristic.
Roman V Bezrukovnikov, MIT
(1023-20-1254)

2:45 PM
Tensor categories attached to cells in finite Weyl groups.
Victor Ostrik, University of Oregon
(1023-20-990)

3:15 PM
Injective Modules and Cohomology of Lie Algebras.
Jorg Feldvoss, University of South Alabama
(1023-17-545)

3:45 PM
Cohomology of Category O for the Virasoro algebra.
Brian Boe, Daniel Nakano and Emilie Wiesner*, University of Georgia
(1023-17-471)

4:15 PM
Cohomology for Lie superalgebras.
Brian D Boe*, Jonathan R Kujawa and Daniel K Nakano, University of Georgia
(1023-17-1201)

4:45 PM
Support Varieties for Lie Superalgebras.
Jonathan R Kujawa*, Brian Boe and Daniel K Nakano, University of Georgia
(1023-17-1166)
5:15PM  Varieties for modules of quantum elementary abelian groups.
       Julia Pevtsova, University of Washington, and
       Sarah Witherspoon*, Texas A&M University
       (1023-16-1310)

5:45PM  The exact category of modules of constant Jordan type. Preliminary report.
       Jon F. Carlson, University of Georgia, Eric M.
       Friedlander*, Northwestern University, and Julia
       Pevtsova, University of Washington (1023-20-501)

AMS Special Session on Experimental Mathematics in
Action, II

2:15 PM – 6:05 PM
Organizers: Victor H. Moll, Tulane University
Tewodros Amdeberhan, Tulane University

2:15PM  Symbol-Crunching the Gambler’s Ruin Problem.
       Shalosh B. Ekhad and Doron Zeilberger*, Rutgers
       University (1023-05-228)

2:45PM  GFUN: 15 years later.
       Bruno Salvy, INRIA Rocquencourt, France
       (1023-40-227)

3:15PM  Which Partial Sums of the Taylor Series for e Are
       Convergents to e? (with an Appendix by Kyle
       Schalm).
       Jonathan Sondow, New York City (1023-11-115)

3:45PM  Asymptotic analysis of differential-difference
       equations. Preliminary report.
       Diego Ernesto Dominici, State University of New
       York at New Paltz (1023-41-319)

4:15PM  Experimental Mathematics and Radix
       Representations for Vectors.
       Eva Curry, Acadia University (1023-37-1903)

4:45PM  Polyhedral theta functions - theorems and
       experiments. Preliminary report.
       Cammey E. Cole, University of California
       (1023-16-490)

5:15PM  Hypergeometric Functions that Generate Series
       Acceleration Formulae for Values of the Riemann
       Zeta Function.
       David M. Bradley, University of Maine
       (1023-33-903)

5:45PM  Divisibility Properties of Integer Sequences.
       Dante V. Manna*, Dalhousie University,
       Tewodros Amdeberhan and Victor H. Moll,
       Tulane University (1023-11-67)

AMS Special Session on Financial Mathematics, II

2:15 PM – 6:10 PM
Organizers: Jean-Pierre Fouque, University of
California Santa Barbara
Craig A. Nolder, Florida State University
Knut Solna, University of California
Thaleia Zariphopoulou, University of Texas Austin

2:15PM  Arbitrage Bounds for Volatility Derivatives and the
       Skorokhod embedding Problem.
       Bruno Dupire*, Bloomberg (1023-60-1703)

3:15PM  Small-time and tail asymptotics for diffusion and
       Martin S Forde, UCBS (1023-60-1404)

3:50PM  Mathematical Foundation for Technical Analysis of
       Stock price. Preliminary report.
       Wei Liu, Department of Statistics, East China
       Normal University, Shanghai, and Weian Zheng*,
       University of California Irvine (1023-60-892)

4:45PM  Unified Modeling of Corporate Debt, Credit
       Derivatives, and Equity Derivatives.
       Vadim Linetsky, Northwestern University
       (1023-60-566)

5:45PM  Pricing credit from the top down with affine point
       processes.
       Kay Giesecke, Stanford University, Department
       of Management Science and Engineering
       (1023-60-569)

MAA Minicourse #13: Part A

2:15 PM – 4:15 PM
Teaching a course in the history of mathematics.
Organizers: Victor J. Katz, University of the District
of Columbia
V. Frederick Rickey, U. S. Military Academy

MAA Minicourse #2: Part A

2:15 PM – 4:15 PM
Some deterministic models in mathematical biology
and their simulations.
Organizers: James F. Selgrade, North Carolina
State University
Cammy E. Cole, Meredith College
 Hüseyin Koçak, University of Miami,
Coral Gables

MAA Minicourse #8: Part A

2:15 PM – 4:15 PM
Mathematics and geometry of voting.
Organizer: Donald G. Saari, University of
California Irvine

AMS Session on Algebra and Group Theory, II

2:15 PM – 6:10 PM

2:15PM  The Primeness of Just Infinite Algebras.
       Cayley A. Pendergrass*, Albion College, and John
       Farina, University of California, San Diego
       (1023-16-490)

2:30PM  Tridiagonal pairs and the q-tetrahedron algebra.
       Preliminary report.
       Darren R Funk-Neubauer*, University of
       Wisconsin-Madison (1023-16-527)

2:45PM  On distributive properties of operations with ideals
       in an algebra. Preliminary report.
       Avraham Goldstein* and Chokri Cherif, BMCC
       (1023-16-510)

3:00PM  Break.

       Aaron Daniel Wangberg* and Tevian Dray,
       Oregon State University (1023-17-1743)

3:30PM  Maximal subalgebras of the octonions.
       Stephen Gagola III, Case Western Reserve
       University (1023-17-1894)

3:45PM  Break.
AMS Session on Partial Differential Equations, II

2:15 PM – 5:55 PM

2:15PM On the Painleve Property of certain Partial Differential Equations.
A. Bathi Kasturiarachi, Kent State University, Stark Campus (1023-35-1661)

2:30PM Minimal action for Lagrangians in the Wasserstein space of probability measures.
Wilfrid Gangbo, Truyen V. Nguyen and Adrian Tudorascu, Georgia Institute of Technology (1023-35-1725)

2:45PM Convexity of Level Curves for solutions to \( \Delta u = f(u) \).
David L Finn, Rose-Hulman Institute of Technology (1023-35-1781)

3:00PM Harmonic maps of polyhedra to a sphere with tangent boundary conditions on faces.
Maxim Zyskin, University of Oxford (1023-35-1782)

3:15PM Exponential attractors for the Allen-Cahn equation with dynamic boundary conditions.
Cipriano G Gal, Morgan State University (1023-35-1876)

3:30PM Symmetry analysis of a two dimensional diffusion equation with a nonlinear source term.
Danny Arigo, University of Central Arkansas, Luis Suazo and Olabode Sule (1023-35-1911)

3:45PM Hyperbolic Monge-Ampère Equation.
Tamani M Howard, University Of North Texas (1023-35-229)

4:00PM Saddle point characterization and computation for strongly indefinite functionals.
Xianjin Chen and Jianxin Zhou, Texas A&M University, College Station (1023-35-245)

Michael Herty, TU Kaiserslautern (1023-35-278)

AMS Session on Algebra and Number Theory, II

2:15 PM – 5:55 PM

2:15PM Going Up of the \( u \)-Invariant over Formally Real Fields.
Claus Schubert, University of California, Los Angeles (1023-11-1313)

2:30PM Sequences of reducible 0,1-polynomials with exponents in arithmetic progression.
Harry S. Beach, University of Oklahoma (1023-11-1580)

2:45PM Generalizations of Wild semigroups related to \( 3x+1 \) problem.
Ana Caraiani, Princeton University (1023-11-1418)

3:00PM The Triviality and Nontriviality of Tate–Lichtenbaum Self–Pairings.
Susan L. Schmoyer, University of Maryland (1023-11-1490)

3:15PM The reducible case of Serre’s Conjecture.
Spencer Hamblen, Queen’s University, and Ravi Ramakrishna, Cornell University (1023-11-1558)

3:30PM An improvement on the known bounds of discriminants of number fields.
Jason Worth Martin, James Madison University (1023-11-1580)

3:45PM A Faster Algorithm for Random Dense Subset Sums.
Andrew Shallue, University of Wisconsin-Madison (1023-68-810)

4:00PM Atkinson’s formula for the mean square of the Riemann zeta function.
Jennifer Beineke, Western New England College, and Daniel Bump, Stanford University (1023-11-1595)

Alison Setyadi, Dartmouth College (1023-11-165)
<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:30PM</td>
<td>Ruling out elliptic curves of prime conductor.</td>
<td>Jeremiah K. Hower, University of Georgia (1023-11-1770)</td>
</tr>
<tr>
<td>4:45PM</td>
<td>On composite numbers that remain composite after any insertion of a digit.</td>
<td>Mark Kozek* and Michael Filaseta, University of South Carolina (1023-11-1803)</td>
</tr>
<tr>
<td>5:00PM</td>
<td>On integer quadratic polynomials which are small at a given point. Preliminary report.</td>
<td>Kiryl I. Tsishchanka, DePaul University (1023-11-1850)</td>
</tr>
<tr>
<td>5:15PM</td>
<td>Appell Sequences and Hypergeometric Bernoulli Polynomials.</td>
<td>Abdul Hassen and Hieu D. Nguyen*, Rowan University (1023-11-256)</td>
</tr>
<tr>
<td>5:30PM</td>
<td>On the Number of Norm Subgroups of the Multiplicative Group of an Algebraic Number Field. Preliminary report.</td>
<td>Leonid Stern, Towson University (1023-11-265)</td>
</tr>
<tr>
<td>5:45PM</td>
<td>Cyclotomic Polynomials of Order Three and Maximal Height of Divisors of $x^n - 1$.</td>
<td>Nathan Kaplan, Princeton University (1023-11-348)</td>
</tr>
<tr>
<td>4:45PM</td>
<td>An Adaptive Multiresolution Analysis for Image Compression Using Compact CUBOPLTS.</td>
<td>Kourosh Zarringhalam* and Kevin M. Short, University of New Hampshire (1023-ES-290)</td>
</tr>
<tr>
<td>5:00PM</td>
<td>Approximations of Continuous Newton's Method &amp; Cayley's Problem.</td>
<td>Jon Jacobsen*, Harvey Mudd College, Brad Tennis, Stanford, and Owen Lewis, Harvey Mudd College (1023-ES-343)</td>
</tr>
<tr>
<td>5:15PM</td>
<td>Limit Sets in Graph Directed Constructions.</td>
<td>Eugen Andrei Ghenciu, University of Alaska at Fairbanks (1023-ES-1204)</td>
</tr>
<tr>
<td>5:30PM</td>
<td>Eigenvectors of recursively defined matrices and self-similar measures.</td>
<td>Mark McClure, University of North Carolina at Asheville (1023-ES-860)</td>
</tr>
<tr>
<td>5:45PM</td>
<td>Periodic and connecting orbits as source of chaos in ODEs.</td>
<td>Brian A. Coomes, Huseyin Kokak*, University of Miami, and Kenneth J. Palmer, National Taiwan University (1023-ES-1242)</td>
</tr>
</tbody>
</table>

### MAA Session on Chaos and Fractals

**Friday, January 5 – 2:15 PM – 6:10 PM**

Organizers: Denny Gulick, University of Maryland and Jon W. Scott, Montgomery College

  T D. Taylor, St. Francis Xavier University, Antigonish, Nova Scotia, Canada (1023-ES-78)
- **2:30PM** Fractal Forecasting Missing Image Data.  
  Ning Chen, Shenyang Jianzhu University, and Clifford Reiter*, Lafayette College (1023-ES-164)
- **2:45PM** Describing Points in Sierpinski-Like Fractals.  
  Sandra Fildebrandt and Joseph Pizzica, Saint Joseph's University (1023-ES-257)
- **3:00PM** The Geometry of the Hausdorff Metric.  
  Steven Schlicker, Grand Valley State University (1023-ES-269)
- **3:15PM** From Sierpinski Triangle to Fractal Flowers.  
  Preliminary report.  
  Anne M. Burns, Long Island University, C.W. Post Campus (1023-ES-270)
- **3:30PM** Exploring Fractals from Cantor Dust to the Fractal Skewed Web.  
  Mary Ann Connors, Westfield State College (1023-ES-375)
- **3:45PM** Why Include Fractal Geometry in a Non-Euclidean Geometry Course?  
  Elaine F. Magee, Shenandoah University (1023-ES-1692)
- **4:00PM** Fractals Based on Iterative Structural Self-Cloning Method. Preliminary report.  
  Mingjiang Chen, Center for General Education, National Chiao Tung, Taiwan (1023-ES-1862)
- **4:15PM** Billiards with Mixed Regular and Chaotic Dynamics.  
  Mason A. Porter, California Institute of Technology (1023-ES-50)
- **4:30PM** An Amazing Bifurcation Diagram Arising from Newton's Method.  
  Gareth E. Roberts* and Trevor M. O'Brien, College of the Holy Cross (1023-ES-907)
- **4:45PM** Mathematical Courses for Middle School Teachers: The CSUSB Approach.  
  Robert G. Stein, California State University, San Bernardino (1023-G1-1199)
- **5:00PM** Mathematics Content for Middle School Teachers  
  Design at the University of Louisiana at Lafayette.  
  Lee E. Price, University of Louisiana at Lafayette (1023-G1-1246)
- **5:15PM** A Problem-Solving Course for Pre-Service Middle School Teachers.  
  Kathleen D. Lopez, University of Louisiana at Lafayette (1023-G1-1378)

### MAA Session on Content Courses for the Mathematical Education of Middle School Teachers, II

**Friday, January 5 – 2:15 PM – 5:10 PM**

Organizers: Laurie Burton, Western Oregon University, Maria G. Fung, Western Oregon University, and Klav Krucezek, Western Oregon University

- **2:15PM** Mathematical Courses for Middle School Teachers: The CSUSB Approach.  
  Robert G. Stein, California State University, San Bernardino (1023-G1-1199)
- **2:35PM** Mathematics Content for Middle School Teachers  
  Design at the University of Louisiana at Lafayette.  
  Lee E. Price, University of Louisiana at Lafayette (1023-G1-1246)
- **2:55PM** A Problem-Solving Course for Pre-Service Middle School Teachers.  
  Kathleen D. Lopez, University of Louisiana at Lafayette (1023-G1-1378)
- **3:15PM** Bluffton’s Explore and Explain Mathematics Courses  
  for Middle School Teachers.  
  Donald E. Hooley, Bluffton University (1023-G1-139)
- **3:35PM** Using LOGO to Teach Geometry and Problem Solving To Future Middle School Teachers.  
  Jerry Dwyer, Gary Harris and G Brock Williams*, Texas Tech University (1023-G1-1235)
- **3:55PM** Constructivist Integrated Mathematics and Methods for Middle Grades Teachers.  
  Rebecca A. Walker**, Grand Valley State University, and Charlene E. Beckmann, Grand Valley State University (1023-G1-1450)
- **4:15PM** Western Oregon University’s Middle School Mathematics Focus.  
  Laurie Burton, Maria Fung and Klav Krucezek**, Western Oregon University (1023-G1-277)
Program of the Sessions – Friday, January 5 (cont’d.)

MAA Session on Getting Students to Discuss and to Write about Mathematics, I

2:15 PM – 3:40 PM

Organizers: Martha Ellen (Murphy) Waggoner, Simpson College
Charlotte Knotts-Zides, Wofford College
Harrison W. Straley, Wheaton College

(352) David D Gebhard, Wisconsin Lutheran College (1023-I1-761)

2:30PM On the Evening News.
(353) Sarah L Mabrouk, Framingham State College (1023-I1-1844)

2:45PM Projects that Encourage Students to Talk and Write about Mathematics.
(354) Aihua Li, Montclair State University (1023-I1-1729)

3:00PM Writing assessments in a College Algebra course.
(355) Brian P Kelly, Roger Williams University (1023-I1-1870)

3:15PM An Inter-disciplinary Writing Project in a Liberal Arts Mathematics Course.
(356) Rehana Patel, St. John’s University (1023-I1-1864)

3:30PM Relations... Human Relations. Preliminary report.
(357) Saburo Matsumoto, The Master’s College (1023-I1-326)

MAA Session on Entertaining with Math

2:15 PM – 5:50 PM

Organizer: Timothy P. Chartier, Davidson College

2:15PM Concept Videos for Calculus: A Context that Encapsulates a Lesson.
(358) Mike Martin, Johnson County Community College (1023-I1-635)

2:35PM Better Poker Hands Guaranteed.
(359) Card Colm Mulcahy, Spelman College (1023-H1-1341)

2:55PM The value of entertainment in a mathematics course.
(360) Mark John Meyer*, Hilary C Singer and Artur Elezi, American University (1023-H1-1487)

3:15PM Mathematical Mentalism.
(361) John M. Harris, Furman University (1023-H1-652)

3:35PM Graphs and juggling.
(362) Gregory S. Warrington, Wake Forest University (1023-H1-1437)

3:55PM Mathemagic.
(363) J. Alfredo Jimenez, Penn State University Hazleton (1023-H1-1351)

4:15PM Mathematics in Mime.
(364) Tim Chartier, Davidson College (1023-H1-311)

4:35PM Learning Groups via Object Manipulation.
(365) Preliminary report.
Akihiro Matsuura, College of Science and Engineering, Tokyo Denki University (1023-H1-1832)

4:55PM Dancing with Mathematics.
(366) Colin C Adams*, Williams College, and Mikhail Chkhenkeli, Western New England College (1023-H1-279)

5:15PM An Amazing Mathematical Card Trick.
(367) Arthur T. Benjamin, Harvey Mudd College (1023-H1-73)

MAA Session on Research and Other Mathematical Experiences for Students Outside the Classroom

2:15 PM – 6:00 PM

Organizers: Sarah Spence Adams, Franklin W Olin College of Engineering
James A. Davis, University of Richmond
Susan E. Morey, Texas State University, San Marcos

2:15PM Center for Mentoring Undergraduate Research in Mathematics at BYU.
(369) Michael Dorff, Brigham Young University (1023-P1-382)

2:45PM Research Opportunities for Commuter Students.
(370) Diana M Thomas* and Michael A Jones, Montclair State University (1023-P1-1682)

3:00PM Significance of being an LSAMP scholar. Preliminary report.
(371) Reginald Dorcely*, Frantz Mackenzy Voltaire, Karl C. Clarke, Umesh P. Nagarkatte and Wilbert Hope, Medgar Evers College-CUNY (1023-P1-768)

3:15PM Student Research Projects: Success and Failure.
(372) Preliminary report.
Nathaniel Dean, Texas State University-San Marcos (1023-P1-1430)

3:30PM An International REU Site in Mathematics: Hong Kong.
(373) Graeme Fairweather* and Barbara Moskal, Colorado School of Mines (1023-P1-1438)

(374) Tania M. Lopez, California State University, Northridge (1023-P1-557)

4:00PM Designing a "Methods of Research" Course.
(375) Preliminary report.
Jacqueline A Jensen, Sam Houston State University (1023-P1-1318)

4:15PM The Evolution of an Arts and Sciences Student Symposium.
(376) Jan O Case, Jacksonville State University (1023-P1-491)

4:30PM Undergraduate Teaching which Leads to Undergraduate Research.
(377) Sarah-Marie Belcastro, Smith College and Hampshire College Summer Studies in Mathematics (1023-P1-1021)

4:45PM Initiating A Sonya Kovalevsky Day. Preliminary report.
(378) Ramona Ranalli* and Jennifer McLeod-Mann, The University of Texas at Tyler (1023-P1-776)
Friday, January 5 – Program of the Sessions

MAA General Contributed Paper Session, II

2:15 PM – 5:55 PM
Organizers: Eric S. Marland, Appalachian State University
Jay A. Malmstrom, Oklahoma State Community College

2:15 PM Valuing and Evaluating Teaching in the Mathematics Faculty Hiring Process.
Derek Bruff, Vanderbilt University (1023-Z1-1709)

2:30 PM Faculty Development: Promoting a Collegiate and Cooperative Environment and Preparing New Faculty for Success in the Classroom. Preliminary report.
Jesse S. Byrne* and Charlotte K. Simmons, University of Central Oklahoma (1023-P1-1639)

2:45 PM On the Transition in Mathematics from High School to College. Preliminary report.
Richard O. Hill* and Jon Star, Michigan State University (1023-Z1-698)

3:00 PM Results of the 2005 AP Statistics Curriculum Survey.
Tim Jacobbe, Educational Testing Service (1023-Z1-47)

3:15 PM Running a Mathematics Capstone Course in a Small Department. Preliminary report.
J. Alan Alewine, Mckendree College (1023-Z1-331)

3:30 PM Exploring the similarities and differences in the use of Computer Algebra Systems in teaching at American and British universities. Preliminary report.
Zsolt Lavidza, Cambridge University (1023-Z1-856)

3:45 PM Moving from objects to process; the case of representations.
May F Hamdan, Lebanese American University (1023-Z1-819)

4:00 PM Houston...we have a bug problem.
Michael R. Bacon, USC Sumter (1023-Z1-1551)

Charlotte Simmons, University of Central Oklahoma (1023-Z1-1457)

4:30 PM Euler Converges Euclid.
Charlie Smith, Park University (1023-Z1-1170)

4:45 PM Everything you want to know about bridge courses – except whether they work. Preliminary report.
Michael B. Ward, Western Oregon University (1023-Z1-299)

5:00 PM Quantitative Literacy Topics: The Need for an “Industry Standard”?
Eric Gaze, Alfred University (1023-Z1-770)

5:15 PM Quantitative Literacy (QL) in the Major at a large University.
Kimberly M Vincent, Washington State University (1023-Z1-1684)

5:30 PM Mathematical Philosophies, and Computers in Educational Trends.
Mohammad R. Khadivi, Jackson State University (1023-Z1-1646)

5:45 PM Can Philosophers Learn How to Solve Problems from Mathematicians (Men o 86e 87c)? Preliminary report.
Carlos Bovell, Mercer Community College (1023-Z1-923)

SIAM Minisymposium on Recent Advances in Computational Scattering

2:15 PM – 6:10 PM
Organizer: Jie Shen, Purdue University

Boundary perturbation methods for high-frequency scattering.
David P. Nicholls*, University of Illinois at Chicago, and Fernando Reitich, University of Minnesota (1023-78-1279)

Discontinuous Galerkin Method for PDEs with Dirac sources with applications in Optical Fiber Laser. Preliminary report.
Wei Cai, UNC Charlotte (1023-65-1594)

Exact Dirichlet-to-Neumann maps on general geometries for elasticity. Preliminary report.
Nilima Nigam*, McGill University, and D.P. Nicholls, U. Illinois Chicago (1023-65-1577)

Scattering by Open Surfaces.
Shidong Jiang, New Jersey Institute of Technology (1023-65-479)

Numerical Solution of the Nonlinear Helmholtz Equation.
Guy Baruch, Gadi Flibich, Tel Aviv University, and Semyon Tsynkov*, North Carolina State University (1023-65-528)

Dispersion analysis of nonconforming finite element methods for the Helmholtz equation.
Dongwoo Sheen*, Seoul National University and Purdue University, Taeyoung Ha, Seoul National University, and Kitak Lee, Samsung SDS (1023-65-1154)

Acceleration of an iterative method for the evaluation of high-frequency multiples scattering effects.
Yassine Boubendir* and Fernando Reitich, University of Minnesota (1023-65-1734)

Efficient and Stable Spectral Methods for the Helmholtz equation in exterior domains.
Jie Shen, Purdue University (1023-65-564)

SIAM Minisymposium on Environmental Modeling: Challenges in Practical Applications and in Teaching

2:15 PM – 5:55 PM
Organizer: William L. Briggs, University of Colorado at Denver

Hazardous materials modeling and other opportunities for student applied mathematics projects.
Charles R. Hadlock, Bentley College (1023-97-1670)

Ecological Problems for Undergraduate Research.
Glenn Ledder, University of Nebraska-Lincoln (1023-92-1305)

Making Models Useful to Decision-Makers.
Holly D. Gaff*, University of Maryland, School of Medicine, and Louis Gross, University of Tennessee (1023-92-1207)
Program of the Sessions – Friday, January 5 (cont’d.)

Math on the Web, I

2:15 PM – 4:50 PM

- 2:15 PM
  MathML 3: Where are we going from here?
  Patrick Ion, American Mathematical Society

- 2:45 PM
  Creating mathematical documents for the Web with Scientific WorkPlace.
  Barry MacKichan, MacKichan Software, Inc.

- 3:30 PM
  Writing questions with randomized parameters in proper mathematical notation for online homework assignments.
  John Risley, WebAssign

- 4:30 PM
  Adventures in sustainability: Development, direction, and lessons from PlanetMath.
  Aaron Krowne, Emory University

Project NExT-YMN Poster Session

2:15 PM – 4:15 PM

Organizers: Kevin E. Charlwood, Washburn University
   Michael C. Axtell, Wabash College

MAA Committee on the Profession Panel Discussion

2:15 PM – 3:35 PM

Ethics in the mathematical sciences.
Organizer: Susan C. Geller, Texas A&M University
Panelists:
   Donald L. Bentley, Pomona College
   John D. Fulton, Clemson University
   Linda Keen, Herbert H. Lehman College of CUNY
   Henry Walker, Grinnell University

MAA Committee on the Undergraduate Program in Mathematics and the SIGMAA on Statistics Education Panel Discussion

2:15 PM – 3:35 PM

Preparing majors for the nonacademic workforce: Projects and internships in applied mathematics and statistics.
Organizers: Thomas L. Moore, Grinnell College
   Harriet S. Pollatsk, Mount Holyoke College
Moderator: Thomas L. Moore
Panelists: Matthew P. Richey, St. Olaf College

MAA Panel Discussion

2:15 PM – 3:35 PM

The role of assessment in helping students learn.
Organizers: Catherine M. Murphy, Purdue University Calumet
   Daniel P. Maki, Indiana University
Panelists: Bernard L. Madison, University of Arkansas
   William A. Marion, Jr, Valparaiso University
   Barbara Moskal, Colorado School of Mines

AWM Panel Discussion

2:15 PM – 3:40 PM

Women advancing to leadership: When and how.
Organizer: Barbara L. Keyfitz, The Fields Institute
   and University of Houston
Moderator: Barbara L. Keyfitz
Panelists: Lisa Fauci, Tulane University
   Cathy B. Kessel, Berkeley, CA
   Johanna Leveit Sengers, NIST
   Joan R. Leitzel, University of New Hampshire
   Carolyn R. Mahoney, Lincoln University

MAA Session on Mathlets for Teaching and Learning Mathematics

2:20 PM – 5:35 PM

Organizers: David Strong, Pepperdine University
   Thomas Leathrum, Jacksonville State University
   Joe Yanik, Emporia State University

- 2:20 PM
  Experiments with Matrices Showing How to Transform and Animate Computer Images to New Students. Preliminary report.
  Charles A Sulewski and Frank Wattenberg, United States Military Academy at West Point
  (1023-M5-1779)

- 2:40 PM
  A Mathlet to Interactively Explore Ordinary Differential Equation Solvers.
  Nicholas A Dovidio, Davidson College
  (1023-M5-1637)

- 3:00 PM
  Modeling with Functions: A Student Centered, Discovery Approach.
  Michael Mays, West Virginia University
  (1023-M5-746)

- 3:20 PM
  Parameter passing in Mathematical Java Toolkit applets.
  Frank Wattenberg, United States Military Academy (1023-M5-1779)

- 3:40 PM
  Interactive Workbooks for Classifying Distributions and Balancing Chemical Equations.
  Sarah L Mabrouk, Framingham State College
  (1023-M5-1856)
Friday, January 5 – Program of the Sessions

4:00PM Using Maplets and Java to Teach Reed-Solomon Codes. Preliminary report.
Richard E. Klima*, Appalachian State University, and Neil P. Sigmon, Radford University (1023-M5-117)

4:20PM An Applet-Based Presentation of the Chebyshev Equioscillation Theorem.
Robert A. Mayans, Fairleigh Dickinson University (1023-M5-44)

4:40PM The UW Praxis Project.
Jennifer J. Kosiak* and Bob Hoar, University of Wisconsin - La Crosse (1023-M5-1810)

5:00PM Multilingual Maplets for WebALT Calculus.
Douglas B Meade*, University of South Carolina, Philip B Yasskin, Texas A&M University, and Mika Seppala, University of Helsinki (1023-M5-1567)

5:20PM Maplets for Calculus - Now with Proofs.
Philip B. Yasskin*, Texas A&M University, Douglas B. Meade, University of South Carolina, and Mika Seppala, University of Helsinki (1023-M5-254)

MAA Section Officers

2:30 PM – 5:00 PM

Project NExT Panel Discussion

3:00 PM – 5:00 PM

Becoming a leader in your department.
Organizers: Edwin P. Herman, University of Wisconsin-Stevens Point
J. Lyn Miller, Slippery Rock University
Stuart Boersma, Central Washington University
Linda Braddy, East Central University
Duff Campbell, Hendrix College
Jill E. Guerra, University of Arkansas, Fort Smith
Thomas C. Ratliff, Wheaton College
Judy L. Walker, University of Nebraska-Lincoln

MAA Invited Address

3:40 PM – 4:30 PM

(425) Baseball, Shakespeare, and modern statistical theory.
Bradley Efron, Stanford University (1023-A0-20)

AWM Business Meeting

3:45 PM – 4:15 PM

SIGMAA on the History of Mathematics Panel Discussion

3:50 PM – 5:40 PM

The practice of math history.
Organizers: William Branson, St. Cloud State University
Amy E. Shell-Gellasch, Pacific Lutheran University
V. Frederick Rickey, U.S. Military Academy
Karen H. Parshall, University of Virginia
Panelists:
Joseph W. Dauben, Herbert H. Lehman College of CUNY

Mathematics and mathematicians in emerging nations.
Organizers: M. Leigh Lunsford, Longwood University
Lisa Elaine Marano, West Chester University of Pennsylvania
Panelists: Joel K. Haack, University of Northern Iowa
Aihua Li, Montclair State University
Kate McGivney, Shippensburg University of Pennsylvania
Claudio H. Morales, University of Alabama, Huntsville
Miranda L. Teboh-Ewungkem, Lafayette College

MAA Committee on Graduate Students-YMN Panel Discussion

3:50 PM – 5:10 PM

How to interview for a job in the mathematical sciences.
Organizer: David C. Manderscheid, University of Iowa
Sharon M. Clarke, Pepperdine University
James H. Freeman, Cornell College
David T. Kung, St. Mary's College of Maryland
David C. Manderscheid

SIGMAA on Environmental Mathematics Annual Meeting and Guest Lecture

4:00 PM – 5:30 PM

Katrina and its aftermath: Institutional survival in New Orleans since the storm.
Organizer: Jim E. Hoste, Pitzer College
Moderator: Jim E. Hoste
Panelists: Kenneth W. Holladay, University of New Orleans
Morris Kalka, Tulane University
Vlajko L. Kocic, Xavier University of Louisiana
Katarzyna Saxton, Loyola University New Orleans

Welcome Reception for Undergraduate Students

4:00 PM – 5:00 PM

AMS Committee on the Profession Presentation

4:30 PM – 6:00 PM

Katrina and its aftermath: Institutional survival in New Orleans since the storm.
Organizer: Jim E. Hoste, Pitzer College
Moderator: Jim E. Hoste
Panelists: Kenneth W. Holladay, University of New Orleans
Morris Kalka, Tulane University
Vlajko L. Kocic, Xavier University of Louisiana
Katarzyna Saxton, Loyola University New Orleans
MAA Minicourse #14: Part A
4:45 PM – 6:45 PM
Contemporary college algebra: A refocused college algebra course.
Organizers: Donald B. Small, U. S. Military Academy
Laurette Foster, Prairie View A&M University

MAA Minicourse #3: Part A
4:45 PM – 6:45 PM
A tool to implement quantitative literacy (QL): Spreadsheets Across the Curriculum.
Organizers: Semra Kılıç-Bahi, Colby-Sawyer College
Gary T. Franchy, Davenport University
Cheryl Coolidge, Colby-Sawyer College
William A. Thomas, Colby-Sawyer College

MAA Minicourse #9: Part A
4:45 PM – 6:45 PM
Evaluating student presentations in mathematics.
Organizers: Suzanne Dorée, Augsburg College
Richard J. Jardine, Keene State College
Thomas J. Linton, Central College

MAA Information Session
5:00 PM – 7:00 PM
Current issues in actuarial science education.
Organizers: Robert E. Buck, Slippery Rock University
Bettye Anne Case, Florida State University
Matthew J. Hassett, Arizona State University
Steve Paris, Florida State University

Reception for Graduate Students and First-Time Participants
5:30 PM – 6:30 PM
The AMS and MAA warmly invite these special groups to meet the leadership of your sponsoring organizations.

SIGMAA on the History of Mathematics Annual Meeting and Guest Lecture
6:00 PM – 7:00 PM
Organizer: Amy E. Shell-Gellasch, Pacific Lutheran University

AMS Josiah Willard Gibbs Lecture
8:30 PM – 9:30 PM
Mathematics and physics.
Peter D. Lax, New York University-Courant Institute

Saturday, January 6

MAA Department Liaisons Breakfast Meeting
7:00 AM – 8:30 AM

Joint Meetings Registration
7:30 AM – 4:00 PM

AMS-MAA-SIAM Special Session on Research in Mathematics by Undergraduates, I
8:00 AM – 11:55 AM
Organizers: Darren A. Narayan, Rochester Institute of Technology
Carl V. Lutzer, Rochester Institute of Technology
Bernard Brooks, Rochester Institute of Technology
Tamás I. Wiandt, Rochester Institute of Technology
Michael J. Fisher, California State University, Fresno

8:00 AM
Lisa M. Lackney*, University of Akron, and Rebecca Black, Swarthmore College (1023-20-112)

8:30 AM
The Steiner problem on the cone.
Jamie L. Burwood*, Bowdoin College, and Caroline Nielson, University of Southern Utah (1023-51-146)

9:00 AM
The 3-point Steiner problem on the projective plane of constant Gaussian curvature.
Timothy Luke Muggy*, University of Nebraska-Lincoln, and Daniel Murphree, Berry College, Georgia (1023-51-151)

9:30 AM
Delay differential equations modeling vertically transmitted diseases. Preliminary report.
Jonathan Adler, Worcester Polytechnic Institute, Lynne Erickson, Ursinus College, L. Thomas Hill, Kristen Mazur*, Lafayette College, and Thomas Tyrrell, Boston University (1023-34-209)

10:00 AM
A Mathematical Model for the Progression of Idiopathic Pulmonary Fibrosis and its Potential Treatments.
Rahul Bansal, The University of Texas at Austin (1023-92-280)

10:30 AM
On Singular and Nonsingular Magic Squares.
Elizabeth L. Love*, Howard University, Elizabeth A. Wascher and Michael Z. Lee, Central Michigan University (1023-15-366)

11:00 AM
Teruhisha Haruguchi, Lafayette College, Janine LoBue*, Loyola College in Maryland, James Pierce, Illinois Institute of Technology, and David Roberson, North Carolina State University (1023-00-332)
**AMS Special Session on Initial- and Boundary-Value Problems, Solvability, and Stability for some Nonlinear PDEs: Theorem, Computation, and Application, I**

8:00 AM – 10:55 AM

Organizers: **Jerry L. Bona**, University of Illinois at Chicago

Laihan Luo, New York Institute of Technology

8:00 AM

**Remarks on the singular set of the Navier - Stokes equations.**

Andrei Biryuk, Walter Craig*, McMaster University, and Slim Ibrahim, Arizona State University (1023-35-613)

8:30 AM

**Numerical investigation of three-dimensional water waves.** Preliminary report.

Min Chen, Purdue University (1023-76-487)

9:00 AM

**Global Existence of Stagnation-Point Class Solutions for a Perfect Incompressible Fluid.**

Ralph Saxton*, and Feride Tiglay, University of New Orleans (1023-35-402)

9:30 AM

**Two point boundary value problems: the BBM and KdV equations.**

Jerry L Bona, University of Illinois at Chicago, Honggui Chen*, University of Memphis, Shuming Sun, Virginia Polytechnic Institute and State University, and Bingyu Zhang, University of Cincinnati (1023-35-661)

10:00 AM

**Local ill-posedness of the 1D Zakharov system.** Preliminary report.

Justin Holmer*, University of California, Berkeley, and Nikolaos Tzirakis, University of Toronto (1023-35-1730)

10:30 AM

**Analysis of a system of PDEs arising in the homogenisation of chemical degradation mechanisms of porous media inducing an evolution of the microstructure.**

Peter A. Malte, Centre for Industrial Mathematics, FB 3, University of Bremen, Germany (1023-35-142)

**AMS Special Session on Invariant Theory, I**

8:00 AM – 11:55 AM

Organizers: **Mara D. Neusel**, Texas Tech University

Frank D. Grosshans, West Chester University

8:00 AM

**Modular Invariants of Cyclic 2-groups.**

H E A Eddy Campbell*, Memorial University, R J Shank, University of Kent, Canterbury, and D L Wehlau, Royal Military College and Queen's University (1023-13-649)

8:30 AM

**Conformal symmetries of the wave equation and the ladder representation of SO(2, n + 1).** Preliminary report.

Markus Hunziker*, Mark R. Sepanski and Ronald J. Stanke, Baylor University (1023-22-1259)

9:00 AM

**Linearisation of Multiplicative Group Actions.** Preliminary report.

Nicole Lemire, University of Western Ontario (1023-20-895)

9:30 AM

**Multiplicative invariant theory.**

Martin Lorenz, Temple University (1023-13-356)

10:00 AM

**Rings of Invariants Satisfying the Weak Splitting Principle.**

Mara D Neusel, Texas Tech University (1023-13-443)

10:30 AM

**A generalization of the Chevalley-Mitchell theorem.**

Victor Reiner*, University of Minnesota, Larry Smith, Universitat Gottingen, and Peter Webb, University of Minnesota (1023-05-367)

11:00 AM

**Invariant Theory, Hochschild Cohomology, and Graded Hecke Algebras.**

Anne V. Shepler*, University of North Texas, and Sarah Witherspoon, Texas A&M University (1023-16-1195)

11:30 AM

**Apolarity.** Preliminary report.

Joseph P Brennan*, North Dakota State University and University of Central Florida, and Robert M Fossum, University of Illinois at Urbana-Champaign (1023-14-1945)

**AMS Special Session on Mathematical Techniques in Musical Analysis, I**

8:00 AM – 11:55 AM

Organizers: **Robert W. Peck**, Louisiana State University

Julian Hook, Indiana University-Bloomington

Rachel W. Hall, Saint Joseph's University

8:00 AM

**Introduction to Musical Spaces and Transformations.** Preliminary report.

Julian Hook, Indiana University (1023-00-181)

8:30 AM

**Mathematical Aspects of Pairwise Well-formed Scales.**

David Clampil, Yale University (1023-05-516)

9:00 AM

**Musical Intervals and Special Linear Transformations.**

Thomas Noll, Escuela Superior de Musica de Catalunya (1023-11-1349)

9:30 AM

**Elementary Proofs of the Hexachordal Theorem.** Preliminary report.

Godfried T. Toussaint, School of Computer Science, McGill University (1023-00-252)

10:00 AM

**Homometric sets and Z-related chords.**

Clifton Callender*, Florida State University, and Rachel Hall, St. Joseph's University (1023-00-1264)

10:30 AM

**Orbifolds and musical scales.**

Dmitri Tymoczko, Princeton University (1023-51-1118)

11:00 AM

**Voice leading, submajorization, and the distribution constraint.**

Rachel Hall*, Saint Joseph’s University, and Dmitri Tymoczko, Princeton University (1023-00-1634)

11:30 AM

**Chord Quality and Callender-Quinn-Tymoczko Spaces.** Preliminary report.

Ian Quinn, Yale University (1023-00-1791)

**AMS Special Session on Radon Transforms, Convex Geometry, and Geometric Analysis, I**

8:00 AM – 11:55 AM

Organizers: **Eric L. Grinberg**, University of New Hampshire

Peter Kuchment, Texas A&M University

Gustaf Olafsson, Louisiana State University

Eric Todd Quinto, Tufts University
AMS Special Session on Microlocal Analysis and Singular Spaces, I

8:00 AM – 11:40 AM

Organizers: Paul A. Loy, Binghamton University
Andras Vasy, Massachusetts Institute of Technology

8:00AM

Patterson-Sullivan distributions are asymptotic to Wigner distributions on hyperbolic manifolds: An exact conjugacy between classical and quantum mechanics. Preliminary report.

Steve Zelditch*, Johns Hopkins University, and
Nalini Anantharaman, Ecole Normale Superieure de Lyon (1023-37-41)

9:00AM

Quantum decay rates in chaotic scattering.

Maciej Zworski*, University of California, Berkeley, and
Stephane Nonnenmacher, CEA, Saclay (1023-81-1732)

10:00AM

Spreading of regularity for quasimodes.

Jared Wunsch, Northwestern University (1023-35-543)

11:00AM

On multilinear eigenfunction estimates for compact manifolds with boundary.

Matthew D Blair*, Johns Hopkins University, Hart F Smith, University of Washington, and Christopher D Sogge, Johns Hopkins University (1023-42-383)

AMS Special Session on Cohomology and Representation Theory, III

8:00 AM – 11:50 AM

Organizers: Jon F. Carlson, University of Georgia
Daniel K. Nakano, University of Georgia
Julia Pevtsova, University of Washington

8:00AM

Cohomology and Extensions for Finite Groups of Lie Type and Small Primes.

Christopher P. Bendel, University of Wisconsin-Stout, Daniel K. Nakano, University of Georgia, and
Cornelius Pillen*, University of South Alabama (1023-20-1101)

8:30AM

On the kernel of the Gassner representation.

Kevin Knudson, Mississippi State University (1023-20-1325)

9:00AM

Decomposition numbers and Alvis-Curtis duality.

Bernd Ackermann, Universität Stuttgart, and
Sibylle Schroll*, University of Oxford (1023-16-650)

9:30AM

A supercharacter theory for unipotent groups.

P. Diaconis and N. Thiem*, Stanford University (1023-20-1026)

10:00AM

Galois module structure of square classes in Klein 4-group extensions.

F. Chemotti, University of Wisconsin, J. Mináč, University of Western Ontario, and
J. Swallow*, Davidson College (1023-12-60)

10:30AM

Control of Fusion and Normal Fusion Subsystems.

Radu Stancu, The Ohio State University (1023-20-1104)

11:00AM

Cohomology of Specht Modules.

David J Hemmer*, University of Toledo, and
Daniel K Nakano, University of Georgia (1023-20-1101)
### AMS Special Session on Dynamic Programming, I
8:00 AM – 11:45 AM

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 AM</td>
<td>Population-Based Evolutionary Approaches for Solving Markov Decision Processes.</td>
<td>Michael C. Fu* (University of Maryland), Hyeong Soo Chang, Jiaqiao Hu, Jianlin Sun, Steven Marcus (University of Maryland)</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>Optimality Equations and Inequalities for Markov Decision Processes with Applications to Inventory Control. Preliminary report.</td>
<td>Mark Lewis (Cornell University)</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Dynamic Decision Networks, an Efficient Approach to Automated Decision Support in Complex, Uncertain, and Evolving Decision Situations. Preliminary report.</td>
<td>Dan Maxwell* (Innovative Decisions Inc.), Gerald Kobylecki (United States Military Academy), Dennis Buede, Gary Smith (Innovative Decisions Inc.), Brian E. Souhan (United States Military Academy)</td>
</tr>
<tr>
<td>11:00 AM</td>
<td>Approximate Dynamic Programming for Military Applications. Preliminary report.</td>
<td>Warren Powell (Princeton University)</td>
</tr>
</tbody>
</table>

### AMS Special Session on Financial Mathematics, III
8:00 AM – 11:55 AM

<table>
<thead>
<tr>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>8:00 AM</td>
<td>Pricing and Trading Credit Default Swaps.</td>
<td>Tomasz R. Bielecki* (University of Texas Austin), Jacek Jasiak (University of Rhode Island)</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>Markovian Projection in the Problems of Credit Basket Modeling.</td>
<td>Timur Misiripashaev* (NumeriX LLC), Andrei Lopatin (NumeriX LLC)</td>
</tr>
<tr>
<td>9:30 AM</td>
<td>Optimal stopping in regime switching Lévy models, with applications to American options and real options.</td>
<td>Svetlana Boyarchenko and Sergei Levendorski*, The University of Texas at Austin (1023-60-630)</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Option Pricing with Parsimonious Time-inhomogeneous Additive Models.</td>
<td>Mack L. Galloway* and Craig Nolder, Florida State University (1023-60-1051)</td>
</tr>
<tr>
<td>10:30 AM</td>
<td>Continuity corrections for certain perpetual American and Bermudan options on multiple assets.</td>
<td>Frederik S. Herzberg, Universiteit Bonn (1023-91-37)</td>
</tr>
</tbody>
</table>

### AMS Session on Analysis and Ordinary Differential Equations, I
8:00 AM – 11:55 AM

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<tr>
<td>8:00 AM</td>
<td>Functional equations associated with some mean value theorems of differential calculus. Preliminary report.</td>
<td>Mohammad Javaheri (University of Oregon)</td>
</tr>
<tr>
<td>8:30 AM</td>
<td>A Generalized Wallis Formula. Preliminary report.</td>
<td>Mohammad Javaheri (University of Oregon)</td>
</tr>
<tr>
<td>8:45 AM</td>
<td>Boundary interpolation problems for finite Blaschke products.</td>
<td>Gunter Semmler (Munich University of Technology)</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>A Heller-Williamson type theorem for functions in $U^*_p$. Preliminary report.</td>
<td>Yusuf A Muhanna (American University of Sharjah)</td>
</tr>
<tr>
<td>9:15 AM</td>
<td>Counterexamples: Limiting Generalizations of Schwarz's Lemma.</td>
<td>Stephan Edwards (University of Dayton)</td>
</tr>
<tr>
<td>9:45 AM</td>
<td>Unexpected local extrema for the Sendov conjecture, part 2.</td>
<td>Michael J. Miller (Le Moyne College)</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Functional equations of meromorphic functions with small function coefficients.</td>
<td>Chung-Chun Yang (Hong Kong Univ. of Sci.&amp;Tech.)</td>
</tr>
</tbody>
</table>
AMS Session on Dynamical Systems

8:00 AM – 11:55 AM

8:00 AM  Recurrence and chain-recurrence dimension.  
Jim Wiseman, Agnes Scott College (1023-37-1034)

8:15 AM  Dynamics of the p-adic Shift and Applications.  
▶ Alex Levin, Harvard University (1023-37-1071)

8:30 AM  Pulse Solutions of Multi-Parameter Oscillatory Coupling Functions in Neural Networks.  
J. Angola Hart Murdock, Rhodes College (1023-37-1136)

8:45 AM  Pre-bifurcation Amplification and Nonlinear Saturation of Noise Correlation Time.  
Elena D Surovyatkina*, Space Research Institute of Russian Academy of Science, Moscow, Russia and Delaware State University, and Mazeda Shahnin, Delaware State University (1023-37-1193)

9:00 AM  A Denjoy-Wolff Theorem for Hilbert Metric Nonexpansive Maps on Polyhedral Domains.  
Brian C. Lins, Rutgers University - New Brunswick (1023-37-1136)

Brian A. Coomes*, Hüseyin Kocak, University of Miami, and Kenneth J. Palmer, National Taiwan University (1023-37-1253)

9:30 AM  Return times of polynomials as meta-Fibonacci numbers.  
Nathaniel D Emerson, University of Southern California (1023-37-1550)

9:45 AM  A universal model for Borel semiflows.  
David M McClendon, Northwestern University (1023-37-1750)

10:00 AM  Break.

10:15 AM  How the Fed Chaotically Distorts the Relationship Between Risk and Return.  
James Michael Haley, Point Park University (1023-37-1871)

Rodrigo Trevino*, University of Texas at Austin, and Rafael Frongillo, Cornell University (1023-37-1889)

10:45 AM  On ergodic transformations that are simultaneously weakly mixing and uniformly rigid.  
Thomas M. Koberda*, University of Chicago, Jennifer James, Kathryn Lindsey, Williams College, Peter Spen, Princeton University, and Cesar E. Silva, Williams College (1023-37-294)

11:00 AM  Strong Estimate for Lebesgue Derivatives and Ergodic Averages.  
Chaoqin Liu, Eastern Kentucky University (1023-37-542)

11:15 AM  Lie Symmetries for a Model of Growth-death Kinetics.  
Rachelle C. DeCoste, United States Military Academy, West Point (1023-37-686)

11:30 AM  A Rodent-Hantavirus Model Structured by Disease, Developmental Stage, and Sex.  
Curtis Lawrence Wesley* and Linda J. S. Allen, Texas Tech University (1023-37-806)

11:45 AM  Mathematical analysis of an integro-differential equation arising in neuroscience.  
Marina Bevzushenko, Boston University (1023-37-814)

AMS Session on Geometry and Topology, I

8:00 AM – 11:40 AM

8:00 AM  The Three-Point Problem of Chinese Checker Circles.  
Phoebe H McLaughlin* and Shing So, University of Central Missouri (1023-51-1240)

8:15 AM  Approximating short maps by PL-isometries and Arnold’s “Can you make your dollar bigger” problem.  
Dmitri Burago, Pennsylvania State University, Svetlana Krat*, Georgia Institute of Technology, and Anton Petrunin, Pennsylvania State University (1023-51-1302)

8:30 AM  An Analysis of Convex Shapes Using Tridrafters.  
▶ Nathan Reff, Rochester Institute of Technology (1023-51-1819)

8:45 AM  Algorithmic Search for Flexibility Using Resultants of Polynomial Systems.  
▶ Robert H Lewis, Fordham University (1023-51-1906)

9:00 AM  Toro invariants of Higgs bundles on elliptic surfaces associated to base orbifolds of Seifert-fibered homology 3-spheres.  
Mike Krebs, California State University, Los Angeles (1023-51-71)

9:15 AM  Break.

9:45 AM  An algorithm to measure symmetry of n points.  
▶ Dennis Glenn Collins, Univ. of Puerto Rico, Mayaguez (1023-52-1900)

10:00 AM  A Decomposition Theorem in Cyclic Element Theory.  
Shing S. So, University of Central Missouri (1023-54-821)

10:15 AM  Minimal Knotting Numbers.  
▶ Casey Mann*, The University of Texas at Tyler, Benjamin McCarthy, Louisiana State University, Jennifer McCloud-Mann, Ramona Ranalli and Nathan Smith, The University of Texas at Tyler (1023-52-260)
### AMS Session on Applications of Mathematics, I

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>10:30AM</td>
<td>Distance in Three-Dimensional Lattices.</td>
<td>Jennifer McCloud-Mann*, Casey Mann, The University of Texas at Tyler, Benjamin McCartney, Louisiana State University, Ramona Ranalli and Nathan Smith, The University of Texas at Tyler</td>
</tr>
<tr>
<td>10:45AM</td>
<td>Local/Global Phenomena in Geometric Random Graphs.</td>
<td>Ross M Richardson, University of California, San Diego</td>
</tr>
<tr>
<td>11:00AM</td>
<td>Timelike minimal submanifolds in Robertson-Walker spacetimes.</td>
<td>Paul T Allen, University of Oregon</td>
</tr>
<tr>
<td>11:15AM</td>
<td>Cohomogeneity One Manifolds and Non-negative Curvature.</td>
<td>Corey Hoelscher, University of Pennsylvania</td>
</tr>
<tr>
<td>11:30AM</td>
<td>On Enriched Quantum Yang-Baxter Principal Fiber Bundles.</td>
<td>Molobe Mohlala* and S. M. Einstein-Matthews, Howard University</td>
</tr>
</tbody>
</table>

### AMS Session on Algebra and Number Theory, III

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<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>8:00AM</td>
<td>Rigid Body Multiple Impact With the Ground.</td>
<td>Florin V Badiu*, Jianzhong Su and Shan Hua, University of Texas at Arlington (1023-70-1706)</td>
</tr>
<tr>
<td>8:30AM</td>
<td>Further results on the critical Rayleigh number R_c and wave number k_c for the planar Bénard problem with asymmetric boundary conditions.</td>
<td>Preliminary report. Matthew J Glomski, University at Buffalo (1023-76-1072)</td>
</tr>
<tr>
<td>8:45AM</td>
<td>Analysis of a Simple sheared Ferro-fluid.</td>
<td>Arup Mukherjee*, Mark Korkie, Bogdan Nita, John Stevens and Philip Yecko, Montclair State University (1023-76-1107)</td>
</tr>
<tr>
<td>9:00AM</td>
<td>Symplectic Approximation of Euler Flow on a Riemannian Manifold.</td>
<td>Preliminary report. Steven Benzel, Berry College (1023-76-1162)</td>
</tr>
<tr>
<td>9:15AM</td>
<td>The inviscid limit of incompressible fluid in an annulus.</td>
<td>Sara E. Frietz*, California State University, Northridge, Robert Gerrity, Pomona College, and Tiago Picon, Universidade Federal de São Carlos (1023-76-1299)</td>
</tr>
<tr>
<td>9:30AM</td>
<td>Numerical Simulations of Vortex Sheets and Electron Sheets Using Boundary Integral Methods.</td>
<td>Lyudmyla Baranyk, University of Michigan (1023-76-1616)</td>
</tr>
<tr>
<td>10:00AM</td>
<td>On the Stability of KdV equation with a forcing term.</td>
<td>Jeongwhan Choi*, Korea University, and Shuming Sun, Virginia Polytech (1023-76-969)</td>
</tr>
<tr>
<td>10:15AM</td>
<td>An efficient algorithm for the solution of high-frequency scattering by infinite rough surfaces.</td>
<td>Harun Kurkcu* and Fernando Reitich, University of Minnesota (1023-78-1773)</td>
</tr>
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### AMS Session on Algebra and Number Theory, III

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<tr>
<td>10:30AM</td>
<td>Lp estimates of Maxwell's Equations in a bounded domain.</td>
<td>Gang Bao, Ying Li* and Zhengfang Zhou, Michigan State University (1023-78-1790)</td>
</tr>
</tbody>
</table>

### AMS Session on Algebra and Number Theory, III

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<tr>
<td>8:00AM</td>
<td>Arf equivalence classes of quadratic number fields.</td>
<td>Jeonghun Kim, Louisiana State University (1023-11-352)</td>
</tr>
<tr>
<td>8:15AM</td>
<td>A lower bound on the Weil height in terms of an auxiliary polynomial.</td>
<td>Charles L Samuels, The University of Texas at Austin (1023-11-447)</td>
</tr>
<tr>
<td>9:00AM</td>
<td>The Lucas-Pratt primality tree.</td>
<td>Preliminary report. Roy A. Altman, Rowan University</td>
</tr>
<tr>
<td>9:30AM</td>
<td>Fundamental Units of Norm One in Real Quadratic Number Fields.</td>
<td>Thomas C Palfrey, New York University (1023-11-946)</td>
</tr>
<tr>
<td>9:45AM</td>
<td>Zero-free Region for a Hypergeometric zeta function.</td>
<td>Preliminary report. Abdulkadir Hassen*, Rowan University and Nguyen D Hieu, Rowan University (1023-11-675)</td>
</tr>
<tr>
<td>10:00AM</td>
<td>An Identity for Period k Second Order Linear Recurrence Systems.</td>
<td>Curtis N. Cooper, University of Central Missouri (1023-11-825)</td>
</tr>
<tr>
<td>10:30AM</td>
<td>Systems of diagonal forms over p-adic fields.</td>
<td>Preliminary report. Michael P. Knapp, Loyola College (1023-11-890)</td>
</tr>
<tr>
<td>11:00AM</td>
<td>Prime Divisibility in the Lucas Numbers.</td>
<td>Preliminary report. Marina Kondratieva, Moscow State University, Marc Moreno Maza, University of Western Ontario, and Alexey Ovchinnikov* (1023-11-887)</td>
</tr>
<tr>
<td>11:30AM</td>
<td>A combinatorial approach to tetrahedral curves.</td>
<td>Christopher A. Francisco, University of Missouri (1023-13-822)</td>
</tr>
<tr>
<td>11:45AM</td>
<td>Bounding Orders in Rosenfeld-Gröbner algorithm.</td>
<td>Oleg Golubitsky, University of Western Ontario, Marina Kondratieva, Moscow State University, Marc Moreno Maza, University of Western Ontario, and Alexey Ovchinnikov* (1023-13-887)</td>
</tr>
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</table>
MAA Session on Mathematics and Biology 2010:
Building Connections

8:00 AM – 11:55 AM

Organizers: G. Elton Graves, Rose-Hulman Institute of Technology
            Catherine M. Murphy, Purdue University

8:00 AM ► (565) A Course in DNA Chemistry for Mathematicians at
            the State University of New York at Geneseo.
            Wendy K Pogozelski* and Anthony J Macula,
            SUNY Geneseo (1023-KS-1624)

8:20 AM ► (566) Mathematics in Genomic Analysis—A Module for
            Biology Students.
            Vera Cherepinsky, Fairfield University
            (1023-KS-1690)

8:40 AM ► (567) Designing an Introductory Course in Mathematical
            Biology with Team Teaching.
            Krishan M Agrawal, Virginia State University
            (1023-KS-1458)

9:00 AM ► (568) A course in computational biology—Reaching out
            and reaching within.
            M. Chakrabarti, Grand Valley State University
            (1023-KS-1834)

9:20 AM ► (569) Introductory Bioinformatics Interdisciplinary
            Course. Preliminary report.
            Yana Kortsarts*, Widener University, Computer
            Science Department, and Robert W. Morris,
            Widener University, Biology Department
            (1023-KS-264)

9:40 AM ► (570) A Story of Developing a Course and a Textbook in
            Mathematical Biology.
            Raina Robeva* and Robin Davies, Sweet Briar
            College (1023-KS-1796)

10:00 AM ► (571) The Mother of Invention: From Desperation to
            Collaboration.
            Christopher C. Leary*, Colin Kremer, Rachel
            VanCott and Gregg Hartvigsen, SUNY Geneseo
            (1023-KS-1747)

10:20 AM ► (572) Biocalculus at Benedictine University and College
            of DuPage: A Collaboration Between Mathematicians
            and Biologists and Between Four-Year and Two-Year
            Institutions.
            Timothy D. Comar, Benedictine University
            (1023-KS-158)

11:00 AM ► (573) Building an Interdisciplinary Institute: The Institute
            for Quantitative Biology at ETSU.
            Istvan Karsai*, Dept. of Biological Sciences, The
            Institute for Quantitative Biology, East Tennessee
            State University, and Jeff R Knisley, The Institute
            for Quantitative Biology, East Tennessee State
            University (1023-KS-1441)

11:20 AM ► (574) Collaborations between the ETSU Math and Biology
            Departments. Preliminary report.
            Anant P Godbole, East Tennessee State University
            (1023-KS-418)

11:40 AM ► (575) Integrating students from mathematics and
            biology. Preliminary report.
            Marshall E Hampton, University of Minnesota,
            Duluth (1023-KS-505)

MAA Session on Getting Students to Discuss and to
Write about Mathematics, II

8:00 AM – 11:55 AM

Organizers: Martha Ellen (Murphy) Waggoner,
            Simpson College

8:00 AM ► (576) Ward E. Canfield, National-Louis University
            (1023-II-1114)

8:15 AM ► (577) Concepts in Context: Writing and Reasoning about
            Quantitative Issues.
            Tanya Cofer*, Northeastern Illinois University, and
            David C. Jabon, DePaul University, Chicago
            (1023-II-1124)

8:30 AM ► (578) Reading and Discussing Mathematics with Peers.
            Penelope H Dunham, Muhlenberg College
            (1023-II-1192)

8:45 AM ► (579) Converting Calculus Students from Showing Work
            to Explaining. Preliminary report.
            Feryal Alayont, Grand Valley State University
            (1023-II-1280)

9:00 AM ► (580) Getting Math Students to Take Writing Seriously.
            Stephen B. Maurer, Swarthmore College
            (1023-II-173)

9:15 AM ► (581) What is an Assignment Like You Doing in a Class
            Like This?!
            Paula R Stickles, Millikin University
            (1023-II-1338)

9:30 AM ► (582) Group Consulting Projects Using Matrices and
            Linear Programming.
            Katharine F Gurski, George Washington University
            (1023-II-140)

9:45 AM ► (583) Using Research Projects to Develop Mathematical
            Knowledge While Expanding Communication Skills.
            Elizabeth C Rogers, Piedmont College
            (1023-II-1409)

10:00 AM ► (584) Transitions: Using a Variety of Writing Assignments
            in a Bridge Course. Preliminary report.
            Christopher Goff, University of the Pacific
            (1023-II-1423)

10:15 AM ► (585) Writing projects and rubrics in foundational
            mathematics courses.
            Joshua Brandon Holden, Rose-Hulman Institute of
            Technology (1023-II-1439)

10:30 AM ► (586) A Problem-Solving Project for a General Education
            Course.
            Mike Pinter, Belmont University (1023-II-1497)

10:45 AM ► (587) Using Mythbusters Episodes to Prompt Discussion in
            a Mathematical Modeling Course.
            Jennifer Wightman, Coastal Carolina University
            (1023-II-1315)

11:00 AM ► (588) Implementing Problem-Based Learning in
            Introductory Statistics Courses, a Preliminary
            Catherine A Matos, Clayton State University
            (1023-II-1780)

11:15 AM ► (589) Using Group Homework in Calculus to Develop
            Written and Verbal Communication Skills.
            Brian J Birgen, Wartburg College (1023-II-201)

11:30 AM ► (590) Wiki in the mathematics classroom. Preliminary
            report.
            P. Christopher Staecher, Messiah College
            (1023-II-238)

11:45 AM ► (591) A Course with a Focus on the Other Two R’s.
            John F. Putz, Alma College (1023-II-300)

MAA Session on Philosophy of Mathematics, I

8:00 AM – 11:55 AM

Organizers: Bonnie Gold, Monmouth University
Charles R. Hampton, The College of Wooster

8:00AM What Place Does Philosophy Have in Teaching Mathematics? Preliminary report.
Martin E. Flashman, Humboldt State University (1023-N1-1867)

8:40AM Mathematics as Representational Art. Preliminary report.
Sam Stueckle, Trevecca Nazarene University (1023-N1-1392)

9:20AM From an analysis of definitions to a view of mathematics.
Ruggero Ferro, University of Verona, Italy (1023-N1-637)

Jeff Buechner, Rutgers University/Newark (1023-N1-973)

10:40AM Why do we all get the same answers? Kitcher’s anti-apriorism and the problems of social constructivism.
Carl E. Behrens, Alexandria, VA (1023-N1-882)

Andy D. Martin, University of Kentucky (1023-N1-292)

MAA Session on Innovative and Effective Ways to Teach Linear Algebra, II

8:00AM – 11:55 AM

Organizers: David Strong, Pepperdine University
Gilbert Strang, Massachusetts Institute of Technology

8:00AM Introducing Eigenvalues by way of the Resolvent.
Elaine T. Hale* and Steven Cox, Rice University (1023-J1-1663)

8:20AM Cross Stitching, Graph Theory and a Least Path Problem.
Barbara A Ashton*, Borough of Manhattan Community College, CUNY, and Kevin L Dove, Lander University (1023-J1-1758)

8:40AM A matrix route to Snell’s law.
Andrew J. Simoson, King College (1023-J1-259)

9:00AM Linear Algebra For Everyone: The Arithmetic Portal in Vector-Spaces.
Clyde L. Greeno, The MALEI Mathematics Institute (1023-J1-1805)

9:20AM Vector spaces and linear functionals in elementary probability.
Arnold Lebow, Yeshiva University (1023-J1-987)

9:40AM Approximate Contour Image Generation: A Project in Linear Algebra.
Mohamed Allali, Chapman University (1023-J1-1306)

10:00AM Visually Illustrating Rotations, Reflections and Translations in Flash.
Paul R Bouthellier, University of Pittsburgh-Titusville (1023-J1-405)

10:20AM Pedagogy and Visualization: Two Aspects of the Use of a CAS in Linear Algebra.
Russell D Blyth* and Mike May, S.J., Saint Louis University (1023-J1-170)

Helmer Aslaksen, National University of Singapore (1023-J1-1918)

11:00AM Using a Markov Matrix Model as a Thread Throughout the First Linear Algebra Course. Preliminary report.
Stephen Hilbert, Ithaca College, Ithaca NY (1023-J1-1600)

11:20AM Using the discovery learning method in linear algebra.
Petre Ion Ghenciu, University of Wisconsin-Stout (1023-J1-1535)

11:40AM An Honors First-year Seminar in Linear Algebra.
Stephen B. Maurer, Swarthmore College (1023-J1-174)

MAA Session on Research on the Teaching and Learning of Undergraduate Mathematics

8:00 AM – 11:55 AM

Organizers: David E. Meel, Bowling Green State University
Michael Oehrtman, Arizona State University
Chris Rasmussen, San Diego State University

8:00AM How your students use their textbook: A preliminary report. Preliminary report.
Bret Benesh*, Harvard University, Tim Boester, University of Wisconsin-Madison, Aaron Weinberg, Ithaca College, and Emilie Wiesner, University of Georgia-Athens (1023-P5-92)

Brian J. Lindaman, University of Kansas (1023-P5-1763)

8:40AM Examining the Effectiveness of Reading Questions in Introductory University Mathematics Courses.
M. Axtell* and W. Turner, Wabash College (1023-P5-168)

9:00AM Controlling the work in Solving Initial Value Problems: Contrasting Introductory Calculus Textbooks.
Tim Boester, University of Michigan (1023-P5-863)

9:20AM Diagrammatic Reasoning.
H A Dye, US Military Academy (1023-P5-878)

9:40AM An analysis of equation solving strategies of mathematics professors versus undergraduate mathematics majors and secondary mathematics teachers while using graphing calculators.
James R. Hersberger, Indiana University Purdue University Fort Wayne (1023-P5-1241)

10:00AM Study of the Cognitive Relation Between an Infinite Decimal and the Real Number It Represents: How Does an Individual Understand the Truth or Falsity of the Relation 0.999... = 1?.
Kirk Weller, University of Michigan Flint (1023-P5-1287)

Vicki L. Sealey, Arizona State University (1023-P5-1557)

10:40AM Mathematics Anxiety: A Multivariate Examination of Gender Differences between Moberly Area Community College and Truman State University Students.
Carolyn M. Dixon, Truman State University (1023-P5-1660)

11:00AM A Classroom Study of Undergraduates’ Understandings of Limits. Preliminary report.
Timothy C. Boester, University of Wisconsin-Madison (1023-P5-1699)
**MAA General Contributed Paper Session, III**

**Program of the Sessions – Saturday, January 6 (cont’d.)**

8:00 AM – 11:55 AM

**MAA General Contributed Paper Session, III**

Organizers: **Eric S. Marland**, Appalachian State University  
**Jay A. Malmstrom**, Oklahoma State Community College

- **8:00AM** The Gilbreath Principle in Mathematical Magic.  
  **Card Colm Mulcahy**, Spelman College (1023-Z1-1348)

- **8:15AM** Uniqueness and Existence for Unbounded Boundary Value Problems.  
  **Cynthia L. Lanza**, Clayton State University, and **Jeffrey Ehme**, Spelman College (1023-Z1-1772)

- **8:30AM** Incorporating Technology into Mathematics Courses for Secondary Education Mathematics Majors. Preliminary report.  
  **John W Thompson**, U. of Pittsburgh at Johnstown (U9) (1023-Z1-106)

- **9:00AM** Developing Middle School Teachers’ Content Knowledge Through Inquiry In and About Mathematics.  
  **Erik B. Badertscher**, University of Maryland, College Park (1023-Z1-347)

- **9:15AM** Enhancing Middle School Teachers’ Knowledge of Mathematics.  
  **Gulden Karakok**, Tina L. Johnston, Maggie Niess, Tevian Dray, and Tevian Dray, Oregon State University (1023-Z1-1799)

- **9:45AM** Comparing the K-8 Mathematical Content Knowledge of Future Teachers to College Algebra and Calculus Students: Results of a Pretest-Posttest Study.  
  **Betsy Darken**, University of Tennessee at Chattanooga (1023-Z1-349)

- **10:00AM** Using Handheld Technology in Teaching Geometry.  
  **Constance C Edwards**, Western Kentucky University (1023-Z1-1448)

- **10:15AM** Using non-Euclidean geometry to teach Euclidean geometry to K-12 teachers. Preliminary report.  
  **David Damcke**, University of Portland, Tevian Dray*, Oregon State University, **Maria Fung**, Western Oregon University, **Dianne Hart** and **Lyn Riverstone**, Oregon State University (1023-Z1-1828)

- **10:30AM** The Integrated Laboratory Program – Guided Discovery in the Education of Teachers.  
  **Jerome S. Epstein**, Polytechnic University, Brooklyn, NY (1023-Z1-396)

- **10:45AM** Fraction Sets for Basic Digit Sets. Preliminary report.  
  **Darren Wick**, Ashland University (1023-Z1-584)

- **11:00AM** Factoring (16,6,2) difference sets.  
  **C. Bhattacharya**, Randolph-Macon College, and Ken Smith, Central Michigan University (1023-Z1-1417)

- **11:15AM** The Extended Euclidean Algorithm. Preliminary report.  
  **William P. Wardlaw**, Richard F. Maruszewski, U. S. Naval Academy, and Allen J. Schwenk, Western Michigan University (1023-Z1-691)

- **11:30AM** Identifying when computed PageRank scores are accurately ranked. Preliminary report.  
  **Rebecca S. Wills**, North Carolina State University (1023-Z1-1484)

- **11:45AM** Planarizing Non-Planar Polygons.  
  **Douglas G. Burkholder**, Lenoir-Rhyne College (1023-Z1-524)

**SIAM Minisymposium on Mathematical Modeling of Complex Systems in Biology, I**

8:00 AM – 10:50 AM

Organizer: **Lisa J. Fauci**, Tulane University

- **8:00AM** Modeling Biofilm Disinfection: How much is enough?  
  **Nick G Cogan**, Florida State University (1023-92-216)

- **8:30AM** A Multiscale Model of Biofilm as a Senescence-Structured Fluid.  
  **Bruce P. Ayati**, Southern Methodist University, and **Isaac Klapper**, Montana State University (1023-92-637)

- **9:00AM** Voices from the fringe - How distal synapses make themselves heard.  
  **Steven J. Cox**, Rice University, and **Kresimir Josic**, University of Houston (1023-35-836)

- **9:30AM** Alcohol’s Effect on Neuron Firing.  
  **Erika T Camacho**, Loyola Marymount University (1023-92-1421)

- **10:00AM** The Method of Regularized Stokeslets for Biological Flows.  
  **Ricardo Cortez**, Tulane University (1023-76-1874)

- **10:30AM** On the Stability of Periodic Solutions in the Perturbed Chemostat.  
  **Frederic Mazenc**, Projet MERE, INRIA-INRA, France, **Michael Malisoff**, Louisiana State University, Baton Rouge, and **Patrick De Leenheer**, University of Florida (1023-92-57)

**SIAM Minisymposium on Structure and Topology in Graph Theory, I**

8:00 AM – 10:55 AM

Organizers: **Mark N. Ellingham**, Vanderbilt University  
**Chris Stephens**, Middle Tennessee State University  
**Xiaoya Zha**, Middle Tennessee State University

- **8:00AM** Infinite 2-walks in 3-connected planar graphs.  
  **Daniel P. Biebighauser**, Concordia College, Moorhead, Minnesota, and **M. N. Ellingham**, Vanderbilt University (1023-05-771)
Saturday, January 6 – Program of the Sessions

SIGMAA Officers Meeting
8:00 AM – 10:00 AM

AMS Special Session on Free Discontinuity Problems: From Image Processing to Materials Science
8:30 AM – 11:55 AM
Organizers: Blaise Bourdin, Louisiana State University
Christopher J. Larsen, Worcester Polytechnic Institute

8:30 AM
Variational Fracture and Minimality.
Gilles A Francfort, Université Paris 13, France

9:00 AM
Quasistatic evolution in brittle fracture based on a type of strict local energy minimization.
Chris Larsen, WPI (1023-49-1614)

9:30 AM
Quasi static evolution for damage.
Adriana Garroni*, Universita’ di Roma ”La Sapienza”, Italy, and Christopher Larsen, Worcester Polytechnic Institute (1023-49-1317)

10:00 AM
Existence for a model of fracture evolution based on crack fronts.
Christopher J Larsen, Worcester Polytechnic Institute, Michael Ortiz, California Institute of Technology, and Casey L Richardson*, Worcester Polytechnic Institute (1023-49-1640)

10:30 AM
Heat Flows of Linear Growth Maps and Color Image Denoising.
Xiaobing Feng, The University of Tennessee (1023-35-1613)

11:00 AM
Fracture energies as limit of non-local damage energies.
Matteo Negri, Universita’ di Pavia (1023-49-715)

11:30 AM
Numerical implementation of variational brittle fracture.
Blaise A Bourdin, Louisiana State University (1023-49-1229)

MAA Panel Discussion
8:30 AM – 9:50 AM
Euler’s continuing influence.
Organizer: Ed Sandifer, Western Connecticut State University
Panelists: William W. Dunham, Muhlenberg College

Charles R. Hampton, College of Wooster
June E. Barrow-Green, The Open University

Project NExT Panel Discussion
8:30 AM – 9:50 AM
Getting your first book published.
Organizers: T. Christine Stevens, St. Louis University
Aparna W. Higgins, University of Dayton
Joseph A. Gallian, University of Minnesota Duluth
Panelists: Thomas C. Hull, Merrimack College
Donald J. Albers, MAA
Laura A. Taalman, James Madison University
Ruth Baruth, W. H. Freeman

AWM Emmy Noether Lecture
9:00 AM – 9:50 AM
Automorphisms of free groups, outer space, and beyond.
Karen Vogtmann, Cornell University (1023-20-27)

MAA Minicourse #10: Part A
9:00 AM – 11:00 AM
A beginner’s guide to the scholarship of teaching and learning in mathematics.
Organizers: Curtis D. Bennett, Loyola Marymount University
Jacqueline M. Dewar, Loyola Marymount University

MAA Minicourse #16: Part A
9:00 AM – 11:00 AM
More music and mathematics.
Organizer: Leon Harkleroad, Wilton, ME

MAA Session on Reconceptualizing Content Courses for Prospective High School Mathematics Teachers, I
9:00 AM – 11:55 AM
Organizers: Jean McGivney-Burelle, University of Hartford
Neil Portnoy, Stony Brook University

9:00 AM
Effective Mathematics Course Experiences for Prospective High School Mathematics Teachers.
Mary Ann Connors, Westfield State College (1023-15-1485)

9:20 AM
Mathematical Explorations as a Gateway to High-school Content Mastery: a Number Theory Approach. Preliminary report.
Maria G Fung, Western Oregon University (1023-15-1422)

9:40 AM
Diane Barrett, St. John Fisher College (1023-15-54)
Program of the Sessions – Saturday, January 6 (cont’d.)

MAA Poster Session on MAA/Tensor Foundation Projects which Increase the Participation of Women in Mathematics

9:00 AM – 11:00 AM

Organizers: Elizabeth G. Yanik, Emporia State University
Jennifer Hontz, Meredith College
Kathleen A. Sullivan, Seattle University

Joint AMS-MAA Committee on Teaching Assistants and Part-Time Instructors Panel Discussion

9:00 AM – 10:20 AM

Strategic thinking about nonladder faculty.
Organizers: Judith L. Baxter, University of Illinois at Chicago
Kevin E. Charilwood, Washburn University
Natasha M. Speer, Michigan State University
Panelists: Charles Hale, California State University, Pomona
Diane L. Herrmann, University of Chicago
Penelope Kirby, Florida State University
Fred Peskoff, Borough of Manhattan Community College/CUNY

Exhibits and Book Sales

9:30 AM – 5:30 PM

MAA Panel Discussion

10:00 AM – 11:20 AM

Using student portfolios for assessment.
Organizers: Alex J. Heidenberg, U.S. Military Academy
Michael D. Phillips, U.S. Military Academy
Panelists: Connie S. Schrock, Emporia State University
Dennis Kern, Texas A&M University at Texarkana
Cathy Liebars, College of New Jersey
Archie Willmer, III, U.S. Military Academy

MAA Committee on Technologies in Mathematics Education and WEBSIGMAA Panel Discussion

10:00 AM – 11:20 AM

Best practices for expository mathematics in the digital age.
Organizer: Kyle T. Siegrist, University of Alabama, Huntsville
Panelists: Thomas E. Leathrum, Jacksonville State University
Douglas E. Ensley, Shippensburg State University
Franklin A. Wattenberg, U.S. Military Academy
David Smith, Duke University
Kyle T. Siegrist
MAA Invited Address

10:05 AM – 10:55 AM

(675) The Bernoulli brothers in the arena of the early calculus.
Jan van Maanen, Utrecht University (1023-A0-21)

MAA Minicourse #5: Part A

10:30 AM – 12:30 PM

Wavelets and applications: A multidisciplinary undergraduate course with emphasis on scientific computing.
Organizer: Patrick J. Van Fleet, University of St. Thomas

MAA Special Presentation

10:30 AM – 11:50 AM

Proposal writing workshop for grant applications to the NSF Division of Undergraduate Education.
Organizers: Elizabeth J. Teles, NSF Division of Undergraduate Education
Lee L. Zia, NSF Division of Undergraduate Education

SIAM Invited Address

11:10 AM – NOON

(676) Geometry in the movies.
Tony DeRose, Pixar Animation Studios (1023-00-14)

AMS Session on Logic

11:15 AM – 11:55 AM

11:15 AM
Natasha Dobrinen, Kurt Goedel Research Center for Mathematical Logic (1023-03-1479)

11:30 AM
On the Free Left Distributive Algebra on \( \kappa \)-many Generators. Preliminary report.
Sheila K Miller, University of Colorado, Boulder (1023-03-1545)

11:45 AM
On Non-Standard Set Theory Models and the Relativity of Real Numbers.
L. Luo, Beijing Normal University (1023-03-89)

AMS Colloquium Lecture: Lecture II

1:00 PM – 2:00 PM

(680) Limit shapes, real and imagined, II: Algebraic geometry of random surfaces.
Andrei Okounkov, Princeton University (1023-60-03)

AMS-MAA-SIAM Special Session on Research in Mathematics by Undergraduates, II

1:00 PM – 4:25 PM

Organizers: Darren A. Narayan, Rochester Institute of Technology
Carl V. Lutzer, Rochester Institute of Technology
Bernard Brooks, Rochester Institute of Technology
Tamas I. Wiandt, Rochester Institute of Technology

Saturday, January 6 – Program of the Sessions

1:00 PM – 4:00 PM

1:00 PM: Modeling the Spread of Smallpox in the Mayan Population with Excel. Preliminary report.
Hye Yon Yi, Rochester Institute of Technology (1023-00-1100)

1:30 PM: Colorability of Knots and the Kauffman-Harary Conjecture. Preliminary report.
Nicholas E. Dowdall*, Sonoma State University, California, Thomas Mattman, Chico State University, Kevin Meek, Florida State University, and Pablo Solis, MIT (1023-54-805)

2:00 PM: Turk’s Head Knots and the Kauffman-Harary Conjecture. Preliminary report.
Pablo R Solis, Massachusetts Institute of Technology (1023-54-807)

3:00 PM: A Compartmental Model for an Activity-Dependent Perforated Synapse. Preliminary report.
Olga Yuliana Noris* and Diana W. Verzi, San Diego State University-Imperial Valley Campus (1023-92-1119)

Sam P Ruth*, Northwestern University, Arran Christopher Hamm, Wake Forest University, and Sarah Renee Bocking, University of Evansville (1023-20-64)

4:00 PM: Pricing Convertible Bonds. Preliminary report.
Jinjin Qian* and Lindsay Bryant, Lafayette College (1023-90-1553)

AMS-AWM Special Session on Geometric Group Theory, III

1:00 PM – 3:55 PM

Organizers: Ruth M. Charney, Brandeis University
Karen Vogtmann, Cornell University

1:00 PM: Wicket groups and ring groups.
Tara E Brendle*, Louisiana State University, and Allen Hatcher, Cornell University (1023-57-1754)

1:30 PM: Brownstein-Lee Conjecture.
Craig Jensen*, University of New Orleans, Jon McCammon, UC - Santa Barbara, and John Meier, Lafayette College (1023-20-69)

2:00 PM: Core and intersection number in compactified outer space, Part I. Preliminary report.
Michael Handel, Lehman College, CUNY, and Lee Mosher*, Rutgers University, Newark (1023-20-838)

2:30 PM: Core and intersection number in compactified outer space, Part II. Preliminary report.
Michael Handel*, Lehman College, CUNY, and Lee Mosher, Rutgers University, Newark (1023-20-839)

3:00 PM: Unstable Morita Classes in the Homology of the Mapping Class Group. Preliminary report.
James R Conant, University of Tennessee (1023-20-258)

3:30 PM: Cohomology of some subgroups of the automorphism group of a free group.
Alexandra R Pettet, Stanford University (1023-20-1070)
AMS Special Session on Initial- and Boundary-Value Problems, Solvability, and Stability for some Nonlinear PDEs: Theorem, Computation, and Application, II

1:00 PM – 3:55 PM

Organizers: Jerry L. Bona, University of Illinois at Chicago
Laihan Luo, New York Institute of Technology

1:00 PM
Initial-boundary-value Problems for a Three-dimensional Model for Surface Water Waves.
Jerry L. Bona, University of Illinois at Chicago (1023-76-1022)

1:30 PM
Time Periodic Solution of the Korteweg-de Vries Equation on a Bounded Domain and Its Stability.
Muhammad Usman and Bing-Yu Zhang, University of Cincinnati (1023-35-1362)

2:00 PM
Stability of incompressible viscous fluid flows.
Dmitry Pelinovsky, McMaster University (1023-34-422)

2:30 PM
Fifth-order Korteweg-de Vries type equations in Sobolev spaces with negative indices.
Jiahong Wu, Oklahoma State University, Jie Shen, Purdue University, and Juan-Ming Yuan, Providence University, Taiwan (1023-35-641)

3:00 PM
Samuel S Shen, San Diego State University (1023-76-400)

3:30 PM
Thanasis Fokas, Department of Applied Mathematics and Theoretical Physics, University of Cambridge, and Laihan Luo, New York Institute of Technology (1023-35-813)

AMS Special Session on Invariant Theory, II

1:00 PM – 3:55 PM

Organizers: Mara D. Neusel, Texas Tech University
Frank D. Grosshans, West Chester University

1:00 PM
On the invariant theory of the orthogonal group.
Matyas Domokos, Renyi Institute of Mathematics, Hungarian Academy of Sciences (1023-13-1081)

2:00 PM
Problem session on Invariant Theory.

3:00 PM
Black Box Algebras.
Harm Derksen, University of Michigan (1023-17-935)

3:30 PM
Symmetry in SL(3,C)-Character Varieties.
Sean D Lawton, Kansas State University (1023-14-97)

AMS Special Session on Knots, 3-Manifolds, and Their Invariants, III

1:00 PM – 3:55 PM

Organizers: Oliver T. Dasbach, Louisiana State University
Xiao-Song Lin, University of California Riverside

1:00 PM
Some applications of the cosine law to surface geometry and 3-manifolds.
Feng Luo, Rutgers University (1023-57-1527)

1:30 PM
Virtual Homotopy. Preliminary report.
H A Dye, U.S. Military Academy, and Louis H Kauffman, University of Illinois at Chicago (1023-55-529)

2:00 PM
Hochschild homology, cones, and combinatorial patterns in Khovanov type graph homology.
Josef H. Przytycki, George Washington University, Milena D. Pabiniak and Radmila Sazdanovic, GWU (1023-57-1406)

2:30 PM
Analyzing torsion in Khovanov-type graph cohomology over algebra Z[x]/(x^m).
Radmila Sazdanovic, George Washington University, Milena Pabiniak and Josef H Przytycki, GWU (1023-57-846)

3:00 PM
Mahler measures of twisted Alexander polynomials.
Daniel S. Silver and Susan G. Williams, University of South Alabama (1023-57-1561)

3:30 PM
The Mahler measure of Jones polynomials and the twist-bracket polynomial.
Abhiraj Champaanerkar, Univ. of South Alabama, and Ilya Kofman, College of Staten Island, CUNY (1023-57-1262)

AMS Special Session on Arrangements and Related Topics, III

1:00 PM – 3:50 PM

Organizers: Daniel C. Cohen, Louisiana State University
Anne V. Shepler, University of North Texas

1:00 PM
On the Heavyside functions of arrangements and the impossibility theorem by Kenneth Arrow.
Hiroaki Terao, Hokkaido University (1023-32-1880)

1:30 PM
The 1 mod k partition poset and graph connectivity.
John Shareshian, Washington University, and Michelle L. Wachs, University of Miami (1023-05-1742)

2:00 PM
Degeneration varieties and Macaulay inverse systems. Preliminary report.
Max D. Wakefield, Hokkaido University (1023-13-1073)

2:30 PM
Break.

3:00 PM
The space of n ordered points on the line is cut out by simple quadrics if n is not six.
Benjamin J Howard, Institute for Mathematics and its Applications, John Millson, University of Maryland College Park, Andrew Snowden, Princeton University, and Ravi Vakil, Stanford University (1023-14-1068)

3:30 PM
Freeness of Line-Conic Arrangements in P^2.
Stefan O Tohaneanu, Rice University, and Hal Schenck, Texas A&M University (1023-52-1402)

AMS Special Session on Mathematical Techniques in Musical Analysis, II

1:00 PM – 3:55 PM

Organizers: Robert W. Peck, Louisiana State University
Julian Hook, Indiana University-Bloomington
Rachel W. Hall, Saint Joseph’s University
### AMS Special Session on Radon Transforms, Convex Geometry, and Geometric Analysis, II

**1:00 PM – 3:55 PM**

Organizers:  
- **Eric L. Grinberg**, University of New Hampshire  
- **Peter Kuchment**, Texas A&M University  
- **Gestur Olafsson**, Louisiana State University  
- **Eric Todd Quinto**, Tufts University  
- **Boris S. Rubin**, Louisiana State University

1:00PM  
**Isospectral metrics on balls, spheres, and other manifolds with different local geometries.**  
**Zoltan I. Szabo**, Lehman College and Graduate Center of the City University of New York (1023-58-510)

1:30PM  
**Some applications of integral geometry to Finsler geometry.** Preliminary report.  
**Juan-Carlos Alvarez Paiva**, Université des Sciences et Technologies de Lille, and Gauthier Berck, Scuola Normale Superiore di Pisa (1023-44-511)

2:00PM  
**L_p Intersection Bodies.**  
**Monika Ludwig** and **Christoph Haberl**, Technische Universität Wien (1023-52-609)

2:30PM  
**The geometry of L_0.**  
**Nicolai Kalton**, Alexander Koldobsky, University of Missouri, Vladyslav Yaskin and Maryna Yaskina, University of Oklahoma (1023-52-750)

3:00PM  
**A solution to the lower dimensional Busemann-Petty problem in the hyperbolic space.**  
**Vladyslav Yaskin**, University of Oklahoma (1023-52-745)

3:30PM  
**Determination of convex bodies from derivatives of section functions.**  
**Alexander Koldobsky** and **Chris Shane**, University of Missouri-Columbia (1023-52-169)

### AMS Special Session on Calculus of Variations and Nonlinear PDEs: Theory and Applications, II

**1:00 PM – 3:45 PM**

Organizers:  
- **Marian Bocea**, North Dakota State University  
- **Cristina M. Popovici**, North Dakota State University

1:00PM  
**New exact bounds for effective properties of multicomponent conducting composites and Localized polyconvexity.** Preliminary report.  
**Andrei Cherkak**, University of Utah (1023-51-559)

2:00PM  
**Dynamics of steps along a martensitic phase boundary.** Preliminary report.  
**Anna Vainchtein**, University of Pittsburgh, and **Yubao Zhen**, Harbin Institute of Technology (1023-74-455)

3:00PM  
**ε-stable l-convergence.** Preliminary report.  
**Andrea Braides**, University of Rome, and **Chris Larsen**, WPI (1023-49-1631)

### AMS Special Session on Dynamic Programming, II

**1:00 PM – 3:45 PM**

Organizers:  
- **Gerald C. Kobylski**, United States Military Academy  
- **Randal Hickman**, United States Military Academy

1:00PM  
**Dynamic Programming and the Dragonfly Guided Airdrop System.** Preliminary report.  
**David W. Carter**, Draper Laboratory, Cambridge, MA, and **Steve Tavan**, US Army, RDECOM, Natick, MA (1023-49-1182)

1:30PM  
**Applications of Dynamic Programming in a Network of Autonomous Vehicles and Sensors.** Preliminary report.  
**Randal E. Hickman**, United States Military Academy (1023-49-1371)

2:00PM  
**Stochastic UAV Route Planning Using Adaptive Dynamic Programming.** Preliminary report.  
**Darryl K. Ahner**, U.S. Army TRADOC Analysis Center, Monterey, CA (1023-49-1227)

3:00PM  
**Approximate Dynamic Programming Simulation Implementation to a Combinatorial Scheduling Problem.** Preliminary report.  
**Arnold Buss**, Naval Postgraduate School, Monterey, CA (1023-49-1232)

### MAA Minicourse #11: Part A

**1:00 PM – 3:00 PM**

**Origami in undergraduate mathematics courses.**  
Organizer: **Thomas C. Hull**, Merrimack College

### MAA Minicourse #13: Part B

**1:00 PM – 3:00 PM**

**Teaching a course in the history of mathematics.**  
Organizers: **Victor J. Katz**, University of the District of Columbia  
**V. Frederick Rickey**, U. S. Military Academy
MAA Minicourse #6: Part A

1:00 PM – 3:00 PM

WeBWorK 2: An Internet-based system for generating and delivering homework.
Organizers: Arnold K. Pizer, University of Rochester
Michael E. Gage, University of Rochester
Vicki Roth, University of Rochester

AMS Session on Analysis and Ordinary Differential Equations, II

1:00 PM – 3:55 PM

1:00 PM Heat kernel estimates with applications to several complex variables.
Andrew S Raich, Texas A&M University (1023-32-397)
1:15 PM Zeros of Generalized Rogers Ramanujan Series.
Tim Huber, University of Illinois at Urbana-Champaign (1023-33-1177)
1:30 PM On Some Inverse Problem Leading to a Second-Order Linear Functional.
Ridha Sfaxi, Institut Superieur de Gestion de Gabes, Tunisia (1023-33-1556)
1:45 PM Monotone Solutions of Nonlinear Differential Equations.
Bryce Holthouse*, University of Central Missouri, and Lianwen Wang, Department of Mathematics and Computer Science, University of Central Missouri (1023-34-1331)
2:00 PM Stability of Invariant Sets for Functional Differential Equations.
Zhidko S. Athanassov, Bulgarian Academy of Sciences (1023-34-1433)
2:15 PM Blending Mechanical Engineering With Mathematics to Create Interdisciplinary Lively Application Projects (ILAPs).
Michael R. Huber*, Muhlenberg College, Jonathan L. Paynter and Zachary W. Seidel, United States Military Academy (1023-34-154)
2:30 PM Uniqueness implies existence for nth order boundary value problems.
Jeffrey A. Ehme, Spelman College (1023-34-1635)
2:45 PM Minimal Periods of Closed Curves in $\mathbb{R}^{n}$.
George R Grover* and Diana M Thomas, Montclair State University (1023-34-1676)
3:00 PM Impulsive hybrid set valued integro-differential equations and the monotone iterative technique.
Seethi Sivasundaram, Embry-Riddle Aeronautical University (1023-34-323)
John E. Ehrke, Baylor University (1023-34-477)
3:30 PM Analysis of a family of model quasilinear boundary-value problems. 
Matthew Rudd, University of Idaho (1023-34-485)
3:45 PM Existence Results for Nonautonomous Evolution Equations with Nonlocal Initial Conditions.
Sergiu Aizicovici, Ohio University, and Haewon Lee*, Dillard University (1023-34-880)

AMS Session on Geometry and Topology, II

1:00 PM – 4:10 PM

1:00 PM Cheeger Constants of Certain Arithmetic Hyperbolic Three-Manifolds. Preliminary report.
Dominic Lanphier, Western Kentucky University, and Jason Rosenhouse*, James Madison University (1023-34-1726)
Alfredo Villanueva, The University of Iowa (1023-34-3180)
1:30 PM Deformations of the gyroid and Lidinoid minimal surfaces.
Adam G. Weyhaupt, Southern Illinois University Edwardsville (1023-34-1839)
1:45 PM A Family of Minimal Tori in the Sphere $S^3$.
Ridho Ristow Montes, Washington University in St Louis (1023-34-330)
2:00 PM Techniques for classifying nonnegatively curved left-invariant metrics on compact Lie groups.
Jack Huizenga, University of Chicago (1023-34-401)
Amine Gawaz, The University of Texas of the Permian Basin (1023-34-388)
2:30 PM Lie Groups of Automorphisms on Almost $r$-Paracompact Riemannian Manifolds. Preliminary report.
Andrew Bucki, Langston University (1023-34-917)
2:45 PM Tessellation of Klein Bottle by Congruence (mod 6) and Theorems of Fermat (1640) and Joncourt (1762). Preliminary report.
Okan Gurel*, New York, NY, and Demet Gurel, Touro College (1023-35-1293)
3:00 PM Topological Model of Melodic Clustering of a Music Score: Theory and Application to Schumann's Traumerei.
Chantal Bateau, Brock University (1023-34-1605)
Andrzej A. Szymanski, Slippery Rock University of Pennsylvania (1023-34-1650)
3:30 PM A weighted quasimetric for digital topology.
Ralph Kopperman, The City College of CUNY (1023-34-1785)
3:45 PM Uniqueness of Polish group topologies. Preliminary report.
Bojana Pejic* and Paul Gartside, University of Pittsburgh (1023-34-1836)
4:00 PM On results from convexity related to the phase retrieval problem.
Gennadiy Averkov, University of Magdeburg (1023-34-1922)

AMS Session on Applications of Mathematics, II

1:00 PM – 4:10 PM

1:00 PM Numerical simulations of resonant optics in meta-materials with negative refractive index. Preliminary report.
Kathryn E Rasmussen, The University of Texas of the Permian Basin (1023-34-1839)
1:15 PM Strongly Universal Quantum Turing Machines and Invariance of Kolmogorov Complexity.
Markus Muller, Technische Universitaet Berlin, Germany (1023-34-1132)
1:30PM Wave-functions of Šeba billiards.  
B Winn, Texas A&M University (1023-81-1748)

1:45PM The spectral form factor for quantum graphs with spin-orbit coupling.  
Jonathan Harrison, Texas A&M University (1023-81-1884)

2:00PM Mathematical modeling and simulation of texture evolution.  
Maria Emelianenko*, David Kinderlehrer, Shlomo Ta'asan, Carnegie Mellon University, and Dmitry Golovaty, University of Akron (1023-82-1901)

2:15PM Statistical Equilibrium of Slender Vortex Filaments.  
Timothy D Andersen* and Chjan C Lim, Rensselaer Polytechnic Institute (1023-82-601)

2:30PM Well-Posed Initial-Boundary Value Constrained Evolution Problems.  
Alexander Alekseeenko, California State University Northridge (1023-83-1833)

2:45PM Imaging conditions in geophysical depth migration algorithms.  
Bogdan G. Nita, Montclair State University (1023-86-295)

3:00PM Global Optimization in Model-Based Clustering.  
Jeffrey Heath*, Michael Fu and Wolfgang Jank, Univ. of Maryland, College Park (1023-90-1158)

3:15PM Discrete OR and continuous vintage capital models.  
Natali Hritonenko, Prairie View A&M University, and Yuri Yatsenko*, Houston Baptist University (1023-90-1174)

Shane Drew* and Tito Homem-de-Mello, Northwestern University (1023-90-1283)

3:45PM General option exercise rules for regime-switching models.  
Svetlana Boyarchenko and Sergei Levendorskii*, Department of Economics, The University of Texas at Austin (1023-90-1301)

4:00PM Portfolio Selection as a Nash Bargaining Game.  
Youngna Choi and Michael A. Jones*, Montclair State University (1023-90-1414)

AMS Session on Algebra and Number Theory, IV

1:00PM 22 Homology of Singular Real Toric Varieties. Preliminary report.  
Valerie M. Hower, University of Georgia (1023-14-961)

1:15PM Some Results on Jönsson Modules over Commutative Rings with Identity.  
Greg G Oman, The Ohio State University (1023-13-959)

1:30PM Instability of projective reconstruction from 1-view in higher dimension. Preliminary report.  
Marina Bertolini, Universita' degli Studi di Milano, GianMario Besana*, DePaul University - CTI, and Cristina Turrini, Universita' degli Studi di Milano (1023-14-118)

1:45PM Optimal fowmal bounds from Gale dual polynomial systems.  
Frank Sottile*, Texas A&M University, and Frederic Bihan, Universite de Savoie (1023-14-1560)

2:00PM Equivalence of Mirror Families Constructed from Toric Degenerations of Flag Varieties. Preliminary report.  
Joseph P Rusinko, University of Georgia (1023-14-1649)

2:15PM Algebraic Geometric Codes on Anticanonical Surfaces.  
Jennifer A. Everson, University of Nebraska-Lincoln (1023-14-1712)

2:30PM A generalized Euler integral formula for \(\varepsilon\)-factors of irregular singular connections.  
Christopher L. Bremer, University of Chicago (1023-14-1744)

2:45PM A mirror conjecture for projective bundles.  
Artur Elezi, American University (1023-14-1872)

3:00PM Break.

3:15PM Vanishing theta nulls of algebraic curves with automorphisms. Preliminary report.  
Sujeeva Wijesiri, Oakland University (1023-14-797)

3:30PM Numerical deflation of multiple solution components of systems of polynomial equations.  
Anton Leykin*, University of Minnesota, Jan Verschelde and Ailing Zhao, University of Illinois at Chicago (1023-14-798)

3:45PM Surfaces of general type with zero geometric genus. Preliminary report.  
Caryn Werner, Allegheny College (1023-14-876)

MAA Session on Teaching Innovations in Real Analysis, I

1:00 PM – 3:55 PM

Organizers: Robert W. Vallin, Slippery Rock University  
Erik O. Talvila, University College of the Fraser Valley

1:00PM A Spoonful of Sugar: Using Just Enough Innovation For Success.  
Karl-Dieter Crisman, Gordon College (1023-Q1-1539)

1:20PM Enticing the Reluctant Analyst.  
M. Jean McKemie, St. Edward’s University (1023-Q1-1425)

1:40PM To Cantor and Beyond.  
Joana Mhaila, Cal Poly Pomona (1023-Q1-662)

2:00PM A Constructive Approach to Real Analysis.  
Mark Bridger, Northwestern University (1023-Q1-776)

David Scott, University of Puget Sound (1023-Q1-381)

2:40PM Making it “Real”. Preliminary report.  
Sarah V Cook, Washburn University (1023-Q1-599)

3:00PM Using the discovery learning method in Real Analysis.  
Petre Ion Ghenciu, University of Wisconsin-Stout (1023-Q1-529)

Long Wang, Southern Polytechnic State University (1023-Q1-638)

3:40PM Guided Discovery of “Big Picture” Results in Analysis.  
Clark Wells, Grand Valley State University (1023-Q1-948)

MAA Session on Communication Theory in Undergraduate Courses

1:00 PM – 3:35 PM

Organizer: Tim McDevitt, Elizabethtown College
Program of the Sessions – Saturday, January 6 (cont’d.)

1:00PM Simple Signal Processing in the Engineering Mathematics Classroom.

1:20PM Fourier Analysis in a Calculus Course Using Student-Generated Sound Waves. Preliminary report.
(792) Phil Gustafson, Mesa State College (1023-F5-1094)

1:40PM Using Frames to Provide Repetitiously Repetitive Redundancy in Signal Processing.
(793) Troy Henderson, United States Military Academy (1023-F5-1582)

2:00PM Using the Complex Spectral Theorem to Introduce the Discrete Fourier Transform.
(794) Michael E. Orrison, Harvey Mudd College (1023-F5-1080)

2:20PM Edge Detection.
(795) Yu-Ju Kuo, Indiana University of Pennsylvania (1023-F5-1662)

2:40PM A Motivational Course in Cryptology and Coding Theory.
(796) Sarah Spence Adams*, Olin College of Engineering, and Gordon Prickett, Babson College (1023-F5-152)

3:00PM A Matlab GUI for teaching Cryptography and Cryptanalysis.
(797) Robert J McDevitt, Naval Surface Warfare Center, Dahlgren Division (1023-F5-1008)

(798) Tim McDevitt, Elizabethtown College (1023-F5-1581)

MAA Session on Getting Students to Discuss and to Write about Mathematics, III

1:00 PM – 3:55 PM

Organizers: Martha Ellen (Murphy) Waggoner, Simpson College
Charlotte Knotts-Zides, Wofford College
Harrison W. Straley, Wheaton College

1:00PM Service Learning Projects for Discussing and Writing about Mathematics and Computer Technology: Implementation and Assessments.
(799) Morteza Shafii-Mousavi* and Paul Kochanowski, Indiana University South Bend (1023-I1-39)

1:15PM Student Problem Writing Exercises Used to Enhance and Develop Mathematical Exposition. Preliminary report.
(800) Linda McGuire, Muhlenberg College (1023-I1-393)

1:30PM Can You Understand Me Now? Mathematics as Another Language.
(801) Jean M Horn*, NVCC - Woodbridge, and Toni T Robertson, NVCC-Woodbridge (1023-I1-486)

1:45PM Using Groups and Peer Reviews in a Proof Course. Preliminary report.
(802) Sharon S Emerson-Stonnell, Longwood University (1023-I1-506)

2:00PM “Writing-Intensive” Linear Algebra.
(803) Patrick Bahls, University of North Carolina, Asheville (1023-I1-611)

(804) Pam Miltenberger Wovchko, West Virginia Wesleyan College (1023-I1-620)

2:30PM Are you a Mathematical Maoist? Writing Exercises to Explore the Mathematical Self.
(805) Judith L Gieger* and John C Nardo, Oglethorpe University (1023-I1-674)

2:45PM Involving Students in Their Own Learning: Follow up After the First Implementation.
(806) Rodney X. Sturdivant, Robert E. Burks and Brian E. Souhan*, United States Military Academy (1023-I1-769)

3:00PM Writing in a Number Sense Course for Future Elementary Teachers.
(807) Judith Covington, Louisiana State University Shreveport (1023-I1-855)

3:15PM The Mathematics of Politics & Power as an alternative to Trigonometry.
(808) Carl Lutzer* and Bernard Brooks, Rochester Institute of Technology (1023-I1-894)

3:30PM Teaching Writing in a General Education Geometry Course. Preliminary report.
(809) Teresa D Magnus, Rivier College (1023-I1-900)

3:45PM Let’s Talk Mathematics.
(810) Melinda Schulteis, Concordia University, Irvine (1023-I1-916)

MAA Session on Philosophy of Mathematics, II

1:00 PM – 3:45 PM

Organizers: Bonnie Gold, Monmouth University
Charles R. Hampton, The College of Wooster

1:00PM Why the Universe MUST be Complicated. Preliminary report.
(811) G. Edgar Parker*, James S. Sochacki and David C. Carothers, James Madison University (1023-N1-243)

1:40PM Catching the Tortoise: A Case Study in the Rules of Mathematical engagement.
(812) James R Henderson, University of Pittsburgh-Titusville (1023-N1-133)

2:20PM The Philosophical Status of Diagrams in Euclidean Geometry.
(813) Nathaniel Miller, University of Northern Colorado (1023-N1-459)

3:00PM Representations in Knot Classification.
(814) Kenneth Manders, University of Pittsburgh (1023-N1-1387)

MAA Session on Reconceptualizing Content Courses for Prospective High School Mathematics Teachers, II

1:00 PM – 3:55 PM

Organizers: Jean McGivney-Burelle, University of Hartford
Neil Portnoy, Stony Brook University

1:00PM Connecting Postsecondary and Secondary Mathematics: Prospective Teachers’ Understanding of Transformational Geometry.
(815) Karen J Graham*, University of New Hampshire, Todd Grundmeier, California Polytechnic State University, San Luis Obispo, and Neil Portnoy, University of New Hampshire (1023-N5-1515)

1:20PM Connecting Postsecondary and Secondary Mathematics: Content for Preservice Teacher Courses.
(816) Steven R Benson*, Education Development Center, Karen J Graham, University of New Hampshire, Todd Grundmeier, California Polytechnic State University, San Luis Obispo, and Neil Portnoy, University of New Hampshire (1023-N5-1494)
1:40PM  The role of professional development resources in generating mathematical discourse.  
Karen A Marrongelle* and Sean Larsen, Portland State University (1023-N5-1822)  

2:00PM  Connections in Abstract Algebra for Teachers: Bridging Theory and Practice.  
Tamra Cofer*, Northeastern Illinois University, and Bradford R. Findell, University of Georgia (1023-N5-1360)  

2:20PM  A Senior Capstone Course for Future Secondary Mathematics Teachers.  
Mary Garner* and Josip Derado, Kennesaw State University (1023-N5-1536)  

2:40PM  A *reconceptualized* university calculus course – with hands-on applications – designed for prospective and practicing high school teachers.  
Patricia Baggett*, New Mexico State University, and Andrzej Ehrenfeucht, University of Colorado at Boulder (1023-N5-141)  

3:00PM  Facilitating genuine discovery experiences for future high-school mathematics teachers. Preliminary report.  
Greisy Winicki-Landman, Calif. State Polytechnic University Pomona (1023-N5-72)  

Christopher J Yakes* and Jorgen Berglund, California State University, Chico (1023-N5-1379)  

3:40PM  Psychology, pedagogy and epistemology in context of secondary mathematics: A content course for secondary mathematics teachers.  
Debasree Raychaudhuri, California State University at Los Angeles (1023-N3-1891)  

MAA Session On The Scholarship of Teaching and Learning in Mathematics  

1:00PM – 4:00 PM  
Organizers: Curtis D. Bennett, Loyola Marymount University  
Jacqueline M. Dewar, Loyola Marymount University  

1:00PM  Choices, Representations, and Strategies Used in Posing and Solving Problems by Elementary Education Students in the First Math Content Course. Preliminary report.  
Kathryn T Ernie, University of Wisconsin - River Falls (1023-R5-1814)  

1:20PM  Using Clinical Interviewing to Inform Teaching: The Experiences of Three Prospective K-8 Teachers. Preliminary report.  
Cindia D Stewart, Shenandoah University (1023-R5-1546)  

1:40PM  Using Reading Questions in an Introductory Statistics Course to Enhance Understanding of Concepts. Preliminary report.  
Edwin P Herman, University of Wisconsin, Stevens Point (1023-R5-599)  

2:00PM  What Are Students Likely to Learn by Reading Their Textbooks Before Class?  
Bruff Derek, Vanderbilt University (1023-R5-1728)  

2:20PM  How to Engage and Challenge Students in Learning Calculus. Preliminary report.  
Simei Tong, University of Wisconsin-Eau Claire (1023-R5-368)  

2:40PM  Partial Notes: A tool for understanding calculus. Preliminary report.  
Larissa B. Schroeder*, University of Connecticut, Nicholas Gorgievski, Nichols College, and Thomas C. DeFranco, University of Connecticut (1023-R5-1248)  

3:00PM  Curve Sketching Difficulties of Students in Upper Level Courses.  
Ronald E. Mickens, Clark Atlanta University (1023-R5-34)  

Pam Crawford, Jacksonville University (1023-R5-1915)  

3:40PM  Discussion.  

MAA General Contributed Paper Session, IV  

1:00 PM – 3:40 PM  
Organizers: Eric S. Marland, Appalachian State University  
James A. Malmstrom, Oklahoma State Community College  

1:00PM  Understanding Protein-DNA Binding via Fox Coloring. Preliminary report.  
Junalyn P. Navarra-Madsen* and Angela McMichael, Texas Woman’s University (1023-Z1-129)  

Gretchen A. Koch*, Goucher College, and Donald A. Drew, Rensselaer Polytechnic Institute (1023-Z1-1654)  

1:30PM  Geometric Measures as Brain Shape Descriptors. Preliminary report.  
Christian Laing* and Juan B. Gutierrez, Florida State University (1023-Z1-1817)  

1:45PM  A Second Course in Biostatistics at a Liberal Arts College? Preliminary report.  
John D. Kloke, Pomona College (1023-Z1-1411)  

2:00PM  A Model for the Peopling of the Americas Using Logistic-Diffusion Simulations. Preliminary report.  
Elizabeth L. Martin, University of Tennessee (1023-Z1-1403)  

2:15PM  Surface Segregation and solute trapping during planar film growth.  
Xiaoying Han* and Brain Spencer, University at Buffalo, The State University of New York (1023-Z1-1381)  

2:30PM  Curricula Models for Undergraduate Computational Science Education.  
Ignatios E. Vakalis, Computer Science, CalPoly State Univ. (1023-Z1-373)  

2:45PM  Louisiana Tech University’s STEM Talent Expansion Program.  
Kelly Crittenden*, James D. Nelson and Galen E. Turner III, Louisiana Tech University (1023-Z1-1596)  

3:00PM  Undergraduate Research Projects using Artificial Neural Networks.  
John C. Merkel, Morehouse College (1023-Z1-1892)  

3:15PM  Hybrid Multiscale Landmark and Deformable Image Registration.  
Dana C Paquin*, Doron Levy, Stanford University, and Lei Xing, Stanford University Department of Radiation Oncology (1023-Z1-818)
Program of the Sessions – Saturday, January 6 (cont’d.)

Siam Minisymposium on Mathematical Modeling of Complex Systems in Biology, II

1:00 PM – 3:50 PM

Organizer: Lisa J. Fauci, Tulane University

1:00PM (843) Mathematical Models for Estimating the Number of People Infected with HIV.
J. Mac Hyman* and Gerardo Chowell, Los Alamos National Laboratory (1023-92-1167)

1:30PM (844) Fluid dynamics and computer simulations of mucociliary transport. Preliminary report.
Xingzhou Yang*, Center for Computational Science, Tulane University, Lisa J. Fauci, Tulane University, and Robert H. Dillon, Washington State University (1023-92-1133)

2:00PM (845) Parameteric inference of biochemical network models. Preliminary report.
Abdul S Jarrah, Reinhard Laubenbacher*, Paola M Vera-Licona, Virginia Tech, and Bernd Sturmfels, University of California, Berkeley (1023-92-651)

2:30PM (846) Towards the Human Genotope. Preliminary report.
Peter M Huggins*, Lior Pachter and Bernd Sturmfels, UC Berkeley (1023-92-1429)

3:00PM (847) Modeling Cancer, the Immune System and Treatment.
L. G. de Pillis, Harvey Mudd College (1023-92-362)

3:30PM (848) Modeling the Shape and Structure of the Human Brain.
Monica K Hurdal, Florida State University (1023-92-673)

Maa Committee on Undergraduate Student Activities and Chapters Panel Discussion

1:00 PM – 2:20 PM

Placement: Friend or foe?
Organizers: Susan L. Forman, Bronx Community College
Reginald K. U. Luke, Middlesex County College
Stephen B. Rodi, Austin Community College

Panelists: Geoffrey Akst, Borough of Manhattan Community College
Steve Newman, Northern Kentucky University
Gordon S. Woodward, University of Nebraska-Lincoln

Siam Minisymposium on Structure and Topology in Graph Theory, II

1:00 PM – 4:15 PM

Organizers: Mark N. Ellingham, Vanderbilt University
Chris Stephens, Middle Tennessee State University
Xiaoya Zha, Middle Tennessee State University

1:00PM (849) 1-embedded minors of 1-embedded graphs. Preliminary report.
Bojan Mohar, Simon Fraser University, Burnaby (1023-05-1353)

1:30PM (850) An extension of Kuratowski Theorem. Preliminary report.
Guoli Ding, LSU (1023-05-1377)

2:00PM (851) Representativity of Cayley maps.
D. Christopher Stephens*, Middle Tennessee State University, Thomas W. Tucker, Colgate University, and Xiaoya Zha, Middle Tennessee State University (1023-05-1454)

2:30PM (852) Progress on Lovász' Path Removal Conjecture.
Ken-ichi Kawarabayashi, National Institute of Informatics (1023-05-1075)

3:00PM (853) Some Remarks on -critical Graphs.
Zixia Song, University of Central Florida (1023-05-1221)

Maa Committee on Two-Year Colleges and Committee on Articulation and Placement Panel Discussion

1:00 PM – 2:20 PM

Placement: Friend or foe?
Organizers: Susan L. Forman, Bronx Community College
Reginald K. U. Luke, Middlesex County College
Stephen B. Rodi, Austin Community College

Panelists: Geoffrey Akst, Borough of Manhattan Community College
Steve Newman, Northern Kentucky University
Gordon S. Woodward, University of Nebraska-Lincoln

AMS-Asl-Maa Panel Discussion

1:00 PM – 2:30 PM

Contemporary perspectives on Hilbert's Second Problem and the Gödel Incompleteness Theorems.
Moderator: Akihiro Kanamori, Boston University
Panelists: Harvey M. Friedman, Ohio State University
David E. Marker, University of Illinois at Chicago
Michael Rathjen, University of Leeds

Maa CUPM Subcommittee on Curriculum Renewal Across the First Two Years Panel Discussion

1:00 PM – 2:20 PM

Reshaping undergraduate mathematics for biology-related disciplines: Ideas and innovations.
Organizer: Jenna P. Carpenter, Louisiana Tech University
Panelists: Eric S. Marland, Appalachian State University
Debra L. Hydorn, University of Mary Washington
Ami Radunskaya, Pomona College
Kathy Taylor, Duquesne University

AMS-Asl-Maa Panel Discussion

1:00 PM – 2:30 PM

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Reshaping undergraduate mathematics for biology-related disciplines: Ideas and innovations.
Organizer: Jenna P. Carpenter, Louisiana Tech University
Panelists: Eric S. Marland, Appalachian State University
Debra L. Hydorn, University of Mary Washington
Ami Radunskaya, Pomona College
Kathy Taylor, Duquesne University

Maa Committee on Two-Year Colleges and Committee on Articulation and Placement Panel Discussion

1:00 PM – 2:20 PM

Placement: Friend or foe?
Organizers: Susan L. Forman, Bronx Community College
Reginald K. U. Luke, Middlesex County College
Stephen B. Rodi, Austin Community College

Panelists: Geoffrey Akst, Borough of Manhattan Community College
Steve Newman, Northern Kentucky University
Gordon S. Woodward, University of Nebraska-Lincoln

Maa Committee on Undergraduate Student Activities and Chapters Panel Discussion

1:00 PM – 2:20 PM

Engaging students in research, clubs, student chapters, and internships.
Organizers: Kay B. Somers, Moravian University
Jody Sorenson, Augsburg College
Gary Gordon, Lafayette College
Saturday, January 6 – Program of the Sessions

AMS Session on Analysis and Functional Analysis, I

1:15 PM – 3:25 PM

1:15PM  Singular Discrete Third Order Boundary Value Problems.  
Curtis J. Kunkel, Baylor University (1023-39-445)

1:30PM  Total regularity revisited. Preliminary report.  
B. E. Rhoades, Indiana University, Bloomington, IN (1023-40-188)

1:45PM  Euler’s little summation formula and special values of the zeta function.  
Thomas J Osler, Rowan University (1023-40-696)

2:00PM  Energy and Discrepancy Are Equivalent.  
Fred J. Hickernell, Illinois Institute of Technology (1023-41-1281)

2:15PM  On Bernstein’s Inequality for Entire Functions of Exponential Type.  
Tarig Qazi, Virginia State University (1023-41-562)

Martin W. Bartelt*, Christopher Newport University, and John Swetits, Old Dominion University (1023-41-982)

2:45PM  Break.

3:00PM  A halfspace is a multiplier on $L^p$.  
J Marshall Ash, DePaul University (1023-42-1149)

3:15PM  Non-uniform sampling and reconstruction from sampling sets with unknown jitter.  
Akradm Aldroubi and Casey C Leonetti*, Vanderbilt University (1023-42-1369)

MAA Poster Session on Projects Supported by the NSF Division of Undergraduate Education

2:00 PM – 4:00 PM

Organizer:  Jon W. Scott, Montgomery Community College

2:00PM  Renewal of College Algebra at South Dakota State University.  
Donna Flint*, Becky Hunter and Dan Kemp, South Dakota State University (864)

2:00PM  A motivational course in cryptography and coding theory.  
Sarah Spence Adams*, Franklin W. Olin College of Engineering, and Gordon Prichett, Babson College (865)

2:00PM  Bridging the Vector Calculus Gap: Episode II.  
Tevian Dray* and Corinne Manogue, Oregon State University (866)

2:00PM  Paradigms in Physics: Multiple Entry Points.  
Corinne Manogue, Tevian Dray*, Barbara Edwards, David McIntyre and Emily van Zee, Oregon State University (867)

2:00PM  Statistics Online Computational Resource for Education (SOCRED).  
Annie Che*, Ivo Dinov and Juana Sanchez, University of California at Los Angeles (868)

2:00PM  WeBWorK, a Web-based Interactive Homework System.  
Arnold Pizer*, Michael Gage and Vicki Roth, University of Rochester (869)

2:00PM  A Comprehensive WeBWorK Problem Library.  
John Jones*, Arizona State University, Jeff Holt, University of Virginia, and William Ziemer, California State University, Long Beach (870)

2:00PM  Adapting and Implementing Guided Discovery Notes in Combinatorics for Large Classes.  
Mary Flahive, Oregon State University (871)

2:00PM  College Algebra in Southeast Louisiana Post Katrina.  
Randall Will*, Sarah Clifton and Ana Will, Southeastern Louisiana University (872)

2:00PM  Adapting K-8 Mathematics Curriculum Materials for Pre-Service Teacher Education.  
Donna Diaz* and William Moss, Clemson University (873)

2:00PM  Transforming Science and Mathematics Teacher Preparation.  
James Curry*, Richard McCray, Carl Wieman, Valerie Otero and William Wood, University of Colorado at Boulder (874)

2:00PM  Proof, Functions & Computations (A web-based course as a laboratory for enhanced teaching and learning in logic, mathematics, and computer science).  
Wilfried Sieg*, Joseph Ramsey and Klaus Sutner, Carnegie Mellon University (875)

2:00PM  Math Across the Community College Curriculum.  
Rebecca Hartzler*, Seattle Central Community College, Christie Gilliland, Green River Community College, Deann Leoni, Edmonds Community College, Patrick Bibby, Miami Dade College, and Ruth Collins, Delaware Technical and Community College (876)

2:00PM  RUTE: Research for Undergraduates in Theoretical Ecology.  
Glenn Ledder*, Bo Deng, Robert Gibson, Irakli Loladze and Svata Louda, University of Nebraska-Lincoln (877)

2:00PM  Phaser: A universal simulator for dynamical systems.  
Huseyin Kocak*, Brian Coomes and Burton Rosenberg, University of Miami (878)

2:00PM  Mathematics and Mathematics Educators Collaborating on Capstone Courses for Secondary Mathematics Teachers.  
Richard Hill*, Sharon Senk and Natasha Speer, Michigan State University (879)

2:00PM  Mathematical Methods for Biology and Medicine.  
Michael Martin*, Johnson County Community College, and Glenn Ledder, University of Nebraska-Lincoln (880)

2:00PM  MathematicsModels.org Expansion Project.  
Solomon Garfunkel*, Consortium For Mathematics & Its Applications, and John Stroyls, Georgia Southwestern State University (881)

2:00PM  WorkMAP: Students’ Mathematical Preparation for Work.  
Solomon Garfunkel*, Consortium For Mathematics & Its Applications, and Susan Forman, Bronx Community College (882)

2:00PM  Dynamic Algebra for Technical Students.  

2:00PM  Collaborative Development of Java Laboratories for College Algebra and Trigonometry.  
Michael Mays* and Laura Pyzdrowski, West Virginia University (884)
Program of the Sessions – Saturday, January 6 (cont’d.)

2:00PM  College Algebra Reform at HACC.
(885) Chris Yarrish* and Dan Fahringer, Harrisburg Area Community College

2:00PM  Enhancing the Mathematical Foundation of Students through Online Course Modules.
Beth Klingner, Pace University

2:00PM  Refocusing College Algebra.
Laurette Foster*, Prairie View A&M University, and Don Small, U.S. Military Academy

2:00PM  Center for Data Analysis and Statistics.
Rod Sturdivant* and Krista Watts, U.S. Military Academy

2:00PM  Core Mathematics.
Alex Heidenberg*, Jerry Kobylske and Don Small, U.S. Military Academy

2:00PM  UBM: Training Undergraduate Students in Mathematics and Biology at UL Lafayette.
Azmy Ackleh*, University of Louisiana at Lafayette, Jacoby Carter, USGS-National Wetlands Research Center, and Susan Mopper, University of Louisiana at Lafayette

2:00PM  Enhancing the Teaching of Linear Algebra with Digital Image Processing.
Mohamed Allali, Chapman University

2:00PM  Math Questions to Engage Students (Math QUEST).
Mark Parker*, Holly Zullo and Kelly Cline, Carroll College

2:00PM  The PascGalois Project: Visualization in Abstract Mathematics.
Michael Bardzell*, Kathleen Shannon, Salisbury University, and Erini Poimenidou, New College of Florida

2:00PM  Classroom Response Systems in Statistics Courses.
Teri J. Murphy*, Curtis McKnight, Michael Richman and Robert Terry, University of Oklahoma

2:00PM  An Accessible Online Resource for Mathematics Students and Instructors.
Lila Roberts*, Georgia College & State University, and Gloria Reece, Southern College of Optometry

2:00PM  UBM, RUI: Research-Focused Learning Communities in Mathematical & Biology.
Jason Miller*, Jon Beck, Michael Kelrick and Laura Fielden-Rechav, Truman State University

2:00PM  The Next STEP: Integrating STEM Learning Communities.
Jason Miller*, Maria Nagan and Jennifer Thompson, Truman State University

2:00PM  Embedding Chemistry Problems in Calculus Courses.
George Rublein* and Robert Orwell, College of William and Mary

2:00PM  Real World STEM Application Modules.
Darren Narayan*, Moises Sudit, Paul Tymann, William Basener and Matthew Coppenbarger, Rochester Institute of Technology

2:00PM  A Biomedical Mathematics Learning Enhancement Network for Diversity (BLEND).
Dominic Clemence*, Mingxiang Chen, Gregory Goins, Mary Smith, Vinayak Kelkar, Catherine White, Venkateswarlu Divi, Yohang Li and Gelonia Dent, North Carolina A&T State University

2:00PM  UBM: Foundation in mathematical biology through interdisciplinary research, training, and curriculum development.
Bala Krishnamoorthy*, Richard Gomulkiewicz, Robert Dillon, Judith McDonald, Martin Morgan and Charlotte Omoto, Washington State University

2:00PM  History Across the Mathematics Curriculum for Preservice Teachers.
Gabriela Sanchis, Elizabethtown College

2:00PM  Interdisciplinary Training of Undergraduates in Biological and Mathematical Sciences with Emphasis on Marine/Coastal Science.
Tor Kwembe*, Hyung Cho and Zhenbu Zhang, Jackson State University

2:00PM  CAUSEWeb: An Undergraduate Statistics Education Digital Library.
Ginger Holmes Rowell*, Middle Tennessee State University, Dennis Pearl, The Ohio State University, and Roger Woodard, North Carolina State University

2:00PM  Inquiry Based Learning in Mathematics.
Michael Starbird*, Edward Odell, Sarah Simmons and Jennifer Smith, The University of Texas at Austin

2:00PM  The National Curve Bank Project - A MATH Archive.
Shirley Gray*, California State University Los Angeles, Bill Austin, University of Tennessee at Martin, Phillip Johnson, Appalachian State University, and Lou Talman, Metropolitan State College of Denver

2:00PM  Research Experiences in Mathematical Biology.
Leslie Wilson*, Ann Castlefranco, Steven Robinow and Andrew Taylor, University of Hawaii

2:00PM  Science Learning Community.
Mary Kay Abbey, Montgomery College

2:00PM  Renewal of College Algebra.
Norma Agras*, Miami Dade College, and J. Michael Pearson, Mathematical Association of America

2:00PM  Professional Enhancement Program (PREP).
J. Michael Pearson, Mathematical Association of America, William Haver, Virginia Commonwealth University, Nancy Baxter Hastings, Dickinson College, Nathaniel Dean, Texas State University-San Marcos, and Jon Scott*, Montgomery College

2:00PM  Equipment and Modules for a Capstone Course in Applied Mathematics.
Dan Goldman, Michael Booty, Bruce Bukiet, Lou Kondic and Michael Siegel*, New Jersey Institute of Technology

2:00PM  Analysis of Stress in Biological Systems.
Ben Fitzpatrick*, Erika Camacho, Wendy Binder, Kam Dahlquist and Gary Kuleck, Loyola Marymount University

2:00PM  ESP: Enhancing Secondary Mathematics Teacher Preparation.
Beverly K. Michael*, Margaret Smith, Ellen Ansel and Paul Gartside, University of Pittsburgh

2:00PM  Preparing Computational Biologists by Encouraging an Academic Minor.
Angelean Hendrix*, David Senseman, Dmitry Gokhman, Kay Robbins, James Bower and Nandini Kannan, University of Texas at San Antonio

2:00PM  Teaching College Algebra from a Modeling Perspective.
Traci Friedeman* and Cathy Bonan-Hamada, Mesa State College

2:00PM  UBM: Quantitative Systems Biology.
Guillermo Goldsztein*, Mark Borodovsky, Leonid Bunimovich and Jung Choi, Georgia Institute of Technology

2:00PM  Revitalizing College Algebra at UND.
Richard Millsap*, Michele liams and Katrina Nagel, University of North Dakota
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<tr>
<th>Time</th>
<th>Event</th>
<th>Organizer/Panelist</th>
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<tr>
<td>2:00PM</td>
<td>Florida Southern College: Experiences with Modeling in College Algebra.</td>
<td>Susan Serrano*, Daniel Jelsovsky and Kenneth Henderson, Jr, Florida Southern College</td>
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<td>College Algebra with Data Analysis.</td>
<td>Tina Deemer*, Elias Toubassi and Ted Laetsch, The University of Arizona</td>
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<td>2:00PM</td>
<td>Native American-based Materials for Integration into Undergraduate Mathematics Courses.</td>
<td>Charles Funkhouser*, University of Montana Missoula, A. Duane Porter, University of Wyoming, Armando Martinez-Cruz, California State University-Fullerton, and Miles Pfahl, Turtle Mountain Community College</td>
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<td></td>
<td>Undergraduate Biomathematical Research Career Initiative at SUNY-Genesee.</td>
<td>Anthony Macula*, Christopher Leary, Gregg Hartvigsen and Wendy Pogozelski, SUNY College at Geneseo</td>
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<td>2:00PM</td>
<td>UBM: Undergraduate Training in Quantitative Environmental Biology.</td>
<td>David Meredith* and Edward Connor, San Francisco State University</td>
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<td>Project NExT Panel Discussion</td>
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<td>Updating the undergraduate mathematics major.</td>
<td>Timothy R. Ray, Southeast Missouri State University</td>
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<td>John W. Thompson, University of Pittsburgh, Johnstown</td>
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<td>William H. Barker, Bowdoin College</td>
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<td>Laurette B. Foster, Prairie View A&amp;M University</td>
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<td>David O. Lomen, University of Arizona</td>
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<td>Paul Zorn, St. Olaf College</td>
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<td>Summer Program for Women in Mathematics (SPWM) Reunion</td>
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<td>Participants will describe their experiences from past programs.</td>
<td>Murlil M. Gupta, George Washington University</td>
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<td>AMS Invited Address</td>
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<td>2:30PM</td>
<td>MAA Committee on Technologies in Mathematics Education Panel Discussion</td>
<td>Electronic student assessment systems.</td>
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<td>Organizers: Michael D. Hvidsten, Gustavus Adolphus College</td>
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<td>Bruce W. Yoshiwara, Los Angeles Pierce College</td>
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<td>Panelists: David P. Bell, Florida Community College</td>
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<td>Michael E. Gage, University of Rochester</td>
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<td>3:00PM</td>
<td>AMS Session on History</td>
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<td>Did Fermat inspire Euler to discover the Quadratic Reciprocity Law for prime numbers?</td>
<td>David J Pengelley, New Mexico State University (1023-01-119)</td>
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<td>Irrationality, Incommensurability, and the Euclidean Algorithm.</td>
<td>David A. Steele, University of North Carolina at Asheville (1023-01-1307)</td>
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<td>3:30PM</td>
<td>Myths of Hypatia. Preliminary report.</td>
<td>William Roger Fuller, Ohio Northern University (1023-01-1370)</td>
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<td>3:20PM</td>
<td>AMS Invited Address</td>
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<td>A Tale of Three Complexities: the Worst of Times, the Best of Times, the Spring of Hope.</td>
<td>Margaret H. Wright, Courant Institute of Mathematical Sciences, New York University (1023-68-07)</td>
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<td>4:25PM</td>
<td>Joint Prize Session</td>
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Jolene Rhodes, Valencia Community College
Phoebe R. Rouse, Louisiana State University

SIGMAA on Quantitative Literacy Panel Discussion

2:30 PM – 3:50 PM
Current practices in quantitative literacy: An interdisciplinary perspective.
Organizer: Maura B. Mast, University of Massachusetts, Boston
Panelists: John A. Winn, Jr, SUNY Farmingdale
William O. Martin, North Dakota State University
Dogan Gomez, North Dakota State University
Robert Kantrowitz, Hamilton College
Mary O’Neill, Hamilton College

SIGMAA on Research in Undergraduate Mathematics Education Panel Discussion

2:30 PM – 4:10 PM
Featured presentations from the Ninth Conference on Research in Undergraduate Mathematics Education.
Organizers: Chris Rasmussen, San Diego State University
David E. Meel, Bowling Green State University
Panelists: Michael Oehrtman, Arizona State University
Susan Nickerson, San Diego State University
Kyeong Hah Roh, Arizona State University

AMS Session on History

3:00 PM – 3:45 PM
Did Fermat inspire Euler to discover the Quadratic Reciprocity Law for prime numbers?
David J Pengelley, New Mexico State University (1023-01-119)
Irrationality, Incommensurability, and the Euclidean Algorithm.
David A. Steele, University of North Carolina at Asheville (1023-01-1307)
Myths of Hypatia. Preliminary report.
William Roger Fuller, Ohio Northern University (1023-01-1370)

AMS Invited Address

3:20 PM – 4:10 PM
A Tale of Three Complexities: the Worst of Times, the Best of Times, the Spring of Hope.
Margaret H. Wright, Courant Institute of Mathematical Sciences, New York University (1023-68-07)

Joint Prize Session

4:25 PM – 5:25 PM
Program of the Sessions – Saturday, January 6 (cont’d.)

Joint Prize Session Reception
5:25 PM – 6:25 PM

SIGMAA on the History of Mathematics Guest Lecture
5:45 PM – 6:30 PM
- (928) The Story of the Euler Story. C. Edward Sandifer, Western Connecticut State University (1023-A0-492)

SIGMAA on the Philosophy of Mathematics Annual Meeting and Guest Lecture
5:45 PM – 6:15 PM
Organizers: Bonnie Gold, Monmouth University
Kevin M. Iga, Pepperdine University
- (929) Does a proof exist if nobody has read it? Klaus Peters, A K Peters Publishers (1023-A0-1399)

SIGMAA on Business, Industry, and Government Reception
5:45 PM – 6:45 PM

SIGMAA on Quantitative Literacy Annual Business Meeting and Reception
5:45 PM – 6:30 PM
Organizer: Maura B. Mast, University of Massachusetts Boston

SIGMAA on Research in Undergraduate Mathematics Education Business Meeting and Presentation of the 2006 RUME Best Paper Award
5:45 PM – 8:15 PM
Organizers: Chris Rasmussen, San Diego State University
David E. Meel, Bowling Green State University
Michael Oehrtman, Arizona State University

SIGMAA on Mathematical and Computational Biology Business Meeting and Reception
5:45 PM – 7:00 PM
Organizer: Eric S. Marland, Appalachian State University

SIGMAA on Statistics Education Business Meeting
5:45 PM – 7:00 PM
Organizer: Ginger Holmes Rowell, Middle Tennessee State University

MAA Two-Year College Reception
5:45 PM – 7:00 PM

Mathematics in Art Presentation
6:00 PM – 6:45 PM
Tetrahedral variations. Presenter: Arthur Silverman, New Orleans sculptor

The Institute in the History of Mathematics and Its Use in Teaching (IHMT) Reunion
6:30 PM – 8:30 PM
All former participants of this MAA project (including those from the Historical Modules Project) are invited.

Young Mathematicians Network Town Meeting
7:30 PM – 8:30 PM

Sunday, January 7

MAA Student Chapter Advisors’ Breakfast
7:00 AM – 8:00 AM

Joint Meetings Registration
7:30 AM – 4:00 PM

AMS-MAA-SIAM Special Session on Research in Mathematics by Undergraduates, III
8:00 AM – 10:55 AM
Organizers: Darren A. Narayan, Rochester Institute of Technology
Carl V. Lutzer, Rochester Institute of Technology
Bernard Brooks, Rochester Institute of Technology
Tamas I. Wiane, Rochester Institute of Technology
Michael J. Fisher, California State University, Fresno

8:00AM (930) The Nonexistence of Cyclic Difference Sets. Bridget D Franklin*, University of Kansas, and Steven Sam, University of California, Berkeley (1023-05-84)


9:00AM (932) Combinatorial symmetry of the 24-cell via matroids. Stephanie Fried*, Grinnell College, Aydin Gerek, Gary Gordon, Lafayette College, and Andrij Perunic, Bard College (1023-05-318)

9:30AM (933) Universal Cycles of Multisets. Preliminary report. Tobias L. Johnson*, Yale University, and Joshua Zahl, California Institute of Technology (1023-05-448)

8:00 AM – 10:50 AM

AMS Special Session on History of Mathematics, I

Organizers: Joseph W. Dauben, Lehman College
Patti Hunter, Westmont College
Victor J. Katz, University of the District of Columbia
Karen H. Parshall, University of Virginia

8:00 AM  
Mathematical Concepts of Infinity in Ancient China.
Yibao Xu, Borough of Manhattan Community College of the City University of New York

9:00 AM  
Is addition a fundamental operation in arithmetic?
Kim Plofker, Providence, RI

9:30 AM  
Diagrams — sources hitherto ignored.
Ken Saito, Department of Human Sciences, School of Humanities and Social Sciences, Osaka Prefecture University, Japan

10:00 AM  
Mirrors of the Sea and Jade: Chinese Mathematics in the Song and Yuan Dynasties.
Joseph W. Dauben, Herbert H. Lehman College, City University of New York

10:30 AM  
Geometry and Islamic Art in Tenth-Century Baghdad.
J. Lennart Berggren, Simon Fraser University

11:00 AM  
Jennifer J. Michie, University of Rhode Island

11:30 AM  
Imprimitivity theorem.
Ambar N. Sengupta, Louisiana State University

12:00 PM  
Some thoughts about George Mackey and his Imprimitivity theorem.
Alexandre Kirillov, University of Pennsylvania, Philadelphia, PA

AMS Special Session on Group Representations, Ergodic Theory, and Mathematical Physics: Honoring the Memory of George W. Mackey, I

8:00 AM – 10:45 AM

Organizers: Robert S. Doran, Texas Christian University
Calvin C. Moore, University of California Berkeley
Robert J. Zimmer, The University of Chicago

8:00 AM  
Virtual Groups 45 Years Later.
Calvin C Moore, University of California Berkeley

9:00 AM  
Induced representations, intertwining operators and transfer.
James Arthur, University of Toronto

10:00 AM  
Some thoughts about George Mackey and his Imprimitivity theorem.
Alexandre Kirillov, University of Pennsylvania, Philadelphia, PA

AMS Special Session on Infinite Dimensional Analysis Honoring H.-H. Kuo, I

8:00 AM – 10:50 AM

Organizers: Ambar N. Sengupta, Louisiana State University
P. Sundar, Louisiana State University

8:00 AM  
Complex white noise and infinite dimensional unitary group.
Takeyuki Hida, Meijo University

8:30 AM  
Discussion.

9:00 AM  
The Segal-Bargmann transform for symmetric spaces.
Brian C. Hall*, Univ. of Notre Dame, and Jeffrey J. Mitchell, Robert Morris University

9:30 AM  
Jerome A. Goldstein*, University of Memphis, Rosa Maria Mininni and Silvia Romanelli, Università di Bari

10:00 AM  
Kuo’s Fourier-Mehler transform and the Lévy Laplacian.
Kimihiko Saito, Meijo University

10:30 AM  
Gisele Ruiz Goldstein, University of Memphis
AMS Special Session on Nonlinear Variational Inclusion Problems and Optimization Theory, I

8:00 AM – 10:45 AM
Organizer: Ram U. Verma, University of Toledo, and International Publications
8:00AM (956) Differential Inclusions Driven by Vector Measures and their Optimal Control. N.U Ahmed, SITE and Department of Mathematics, University of Ottawa (1023-49-135)
9:00AM (957) Necessary and Sufficient Conditions for Isolated Local Minima of Nonsmooth Functions. Elena Constantin, University of Pittsburgh - Johnstown (1023-49-783)
10:00AM (958) Multivariate Euler Type Identity and Optimal Multivariate Ostrowski Type Inequalities. Preliminary report. George A Anastassiou, University of Memphis (1023-26-184)

AMS Special Session on Numerical Relativity, I

8:00 AM – 10:55 AM
Organizers: Alexander M. Alekseenko, California State University Northridge
Arup Mukherjee, Montclair State University
8:00AM (959) Generalized Harmonic Evolutions of Binary Black Hole Spacetimes. Lee Lindblom, Caltech (1023-83-985)
9:00AM (960) On the uniqueness of asymptotically AdS space-times. Preliminary report. Mingliang Cai, University of Miami, and Jie Qing*, UC Santa Cruz (1023-53-912)
9:30AM (961) Quantum mechanical healing of classical spacetime singularities. Deborah A. Konkowski*, U.S. Naval Academy, and Thomas M. Helliswell, Harvey Mudd College (1023-83-666)
10:00AM (962) Blowup of smooth solutions for relativistic Euler equations. Ronghua Pan*, Georgia Institute of Technology, and Joel A. Smoller, The University of Michigan (1023-35-1197)
10:30AM (963) Linearized Stability of the Schwarzschild Black Hole. Joel A. Smoller, University of Michigan (1023-83-830)

AMS Special Session on Arithmetic of Function Fields, I

8:00 AM – 10:45 AM
Organizers: Allison M. Pacelli, Williams College
Michael J. Rosen, Brown University
8:00AM (964) Heegner points and the rank of elliptic curves over large extensions of global fields. Bo-Hae Im*, Chung-Ang University, Seoul, Korea, and Florian Breuer, University of Stellenbosch (1023-11-1030)
8:30AM (965) Ranks of abelian varieties in towers of function fields. Douglas Ulmer, University of Arizona (1023-11-1368)
9:00AM (966) Families of Twists and Inverse Galois. Preliminary report. Chris Hall, University of Texas at Austin (1023-11-600)

AMS Special Session on Algebraic Function Fields, II

8:00 AM – 10:45 AM
Organizers: David R. Hayes, University of Massachusetts at Amherst (1023-12-719)
10:00AM (967) Galois groups of difference equations and algebraic relations among periods of Drinfeld modules. Preliminary report. Chieh-Yu Chang, National Tsing-Hua University, and Matthew Papanikolas*, Texas A&M University (1023-11-1542)

AMS Special Session on Universal Algebra and Order, I

8:00 AM – 10:40 AM
Organizers: John W. Snow, Sam Houston State University
Japheth Wood, Bard College
8:00AM (969) Characterizing Lattice Terms. Preliminary report. John W. Snow*, Sam Houston State University, and Eric J. Martin, University of Waterloo (1023-06-408)
8:30AM (970) Eliminating Eve’s Eavesdropping (or How to Stop a Snoop). Kristen Meyer, Wisconsin Lutheran College (1023-94-192)
9:00AM (971) Density and Ordered Algebraic Structures. George Metcalfe, Vanderbilt University (1023-06-324)
9:30AM (972) On the automorphisms of the congruence lattice of the semilattice 2^n. Preliminary report. John W. Snow, Sam Houston State University, and Eric J. Martin*, University of Waterloo (1023-06-399)
10:00AM (973) Existence theorems for weakly symmetric operations. Ralph McKenzie, Vanderbilt University (1023-08-186)

AMS Special Session on Microlocal Analysis and Singular Spaces, II

8:00 AM – 10:40 AM
Organizers: Paul A. Loya, Binghamton University
Andras Vasy, Massachusetts Institute of Technology
8:00AM (974) Invisibility and singular metrics. Allan Greenleaf, University of Rochester, Matti Lassas, Helsinki University of Technology, and Gunther Uhlmann*, University of Washington (1023-35-454)
9:00AM (975) Tensor Tomography and Boundary and Lens Rigidity of Riemannian manifolds. Preliminary report. Plamen Stefanov, Purdue University (1023-35-977)
10:00AM (976) Reduction of artifacts for two sided folds. Raluca Felea, Rochester Institute of Technology (1023-42-548)

AMS Special Session on Continuous and Discrete Integrable Systems and Their Applications, I

8:00 AM – 10:55 AM
Organizers: Wen-Xiu Ma, University of South Florida
Taixi Xu, Southern Polytechnic State University
Bao-Feng Feng, University of Texas-Pan American
Sunday, January 7 – Program of the Sessions

AMS Session on Combinatorics, I

8:00 AM – 10:55 AM

8:00AM
Asymptotic Bounds for Permutations Containing Many Different Patterns.
Alison B Miller*, Harvard University (1023-05-1057)

8:15AM
The Metric Dimension of the Cayley Digraphs of Finite Abelian Groups.
Angela S. Hicks*, Furman University (1023-05-1062)

8:30AM
Alliance Partitions in Graphs. Preliminary report.
Raluca M Gera*, Naval Postgraduate School, and Linda Eroh, University of Wisconsin Oshkosh (1023-05-1067)

8:45AM
Counting Isomorphic (16,6,2) Configurations to a particular (16,6,2) Design.
Sharon L Sullivan, Catawba College (1023-05-1151)

9:00AM
Generalized correlation matrices and their relation to the de Bruijn Graph.
Irina Gheorghiciuc*, University of Delaware (1023-05-1173)

9:15AM
Local Properties of Colored Trees.
Rachel Esselstein, Dartmouth College (1023-05-1183)

9:30AM
From a Banquet Seating Problem to a Graph Coloring Problem.
Ping Zhang, Futaba Okamoto*, and Mary Radcliffe, Western Michigan University (1023-05-1206)

9:45AM
A Study of Code Switching in Coding Theory.
Chen-Han Sung*, Texas A&M International University (1023-05-122)

10:00AM
Disjunctive Rado Numbers for some Linear Equations.
Carl D. Mueller*, Georgia Southwestern State University, and Daniel Schaal, South Dakota State University (1023-05-1228)

10:15AM
Forcing hexagons in a hexagonal system.
Zhongyuan Chen*, Penn State University, Beaver Campus, and Zhibo Chen, Penn State University, McKeesport Campus (1023-05-1252)

10:30AM
Distance Graphs on the Integers.
Tristan Denley and Joshua Hanes*, University of Mississippi (1023-05-1340)

10:45AM
2-Regular Leaves of Partial 10-cycle Systems.
D. J. Ashe, University of Tennessee at Chattanooga (1023-05-271)

AMS Session on Analysis and Ordinary Differential Equations, III

8:00 AM – 8:40 AM

8:00AM
Impact of Travel Between Patches for Spatial Spread of Disease.
Lin Wang, University of British Columbia (1023-34-489)

8:15AM
Regularization of Simultaneous Binary Collisions and Periodic Solutions with Singularity in the Collinear Four-Body Problem.
Tianchong OuYang, Brigham Young University, and Zhifu Xie*, College of William & Mary (1023-34-531)

8:30AM
Pattern Formation on Growing Square Domains.
Adela Nicoleta Comanici*, Rice University, and Martin Golubitsky, University of Houston (1023-34-549)

AMS General Session

8:00 AM – 8:55 AM

8:00AM
Computing local L-factors for principal series representations of $Sp_2(F)$ and $S^2(F)$ over p-adic fields. Preliminary report.
Christian A Zorn, University of Maryland, College Park (1023-00-1200)

8:15AM
Critical Mathematics: Enhancing the equity principle in mathematics methods courses.
Elizabeth M de Freitas, Adelphi University, NY (1023-00-1499)

8:30AM
Zengxiang Tong, Otterbein College (1023-00-1677)

8:45AM
Neo-Riemannian Permutations.
Franck Jedrzejewski, French Atomic Energy Commission (CEA) (1023-00-560)

AMS Session on Geometry and Topology, III

8:00 AM – 10:40 AM

8:00AM
Some results on shifts on o-dimensional compacta. Preliminary report.
Minaksundaram Rajagopalan, Tennessee State University (1023-54-246)

8:15AM
On the Spectrum of Operators on Banach Spaces.
Mohammed Yahdi, Ursinus College (1023-54-473)

 Dummy month 2001
 Notices of the AMS 77
AMS Session on Applications of Mathematics, III

8:00 AM – 10:55 AM

8:00AM  Stochastic Metapopulation Models for Patch Occupancy.
Amy J. Drew* and Linda J. S. Allen, Texas Tech University (1023-92-1055)

8:15AM  Uniqueness of an equilibrium for a discrete selection-migration model in population genetics.
James F. Selgrade*, North Carolina State University, and James H. Roberds, USDA Forest Service (1023-92-1230)

8:30AM  Dynamics of Closely Coupled Nephrons.
Saziye Bayram, SUNY-Buffalo State College (1023-92-1295)

8:45AM  Purinergic Receptor Signaling in the RAW
264.7 Macrophage: Modeling Species-Specific Diacylglycerol Dynamics Following Receptor Activation by Uridine 5'-Diphosphate.
Hannah L Callender, Vanderbilt University (1023-92-1324)

9:00AM  Asymptotic Profiles of the Steady States for an SIS Epidemic Patch Model.
L. J. S. Allen, Texas Tech University, B. M. Bolker, Department of Biology, University of Florida, Y. Lou, The Ohio State University, and A. L. Nevali*, Mathematical Biosciences Institute, The Ohio State University (1023-92-1364)

9:15AM  Analytically tractable approximation of a forest individual-based simulator.
Nikolay S Strigul*, Department of Ecology and Evolutionary Biology, Princeton University, Denis Pristinski, Stevens Institute of Technology, and Stephen Pacala, Department of Ecology and Evolutionary Biology. Princeton University, (1023-92-1427)

AMS Session on Education

8:00 AM – 10:25 AM

8:00AM  Making Physiology Significant and Statistics Meaningful.
Mary F. Majerus* and April Collins-Potterfield, Westminster College (1023-97-1012)

8:15AM  Teaching to succeed.
Natali Hritonenko* and Edward Mason, Prairie View A&M University (1023-97-1169)

8:30AM  Conceptions of infinitesimals in undergraduate calculus students and in history.
Robert E Ely, University of Wisconsin-Madison (1023-97-1301)

8:45AM  An Overview of Ohio Northern University’s Mathematical Assessments being used to Satisfy NCATE’s New Guidelines. Preliminary report.
Sandy Schroeder, Ohio Northern University (1023-97-1389)

9:00AM  Engaging Students in College Algebra.
Juli D’Ann Ratheal, West Texas A & M University (1023-97-313)

9:15AM  A Fertile Ground for Undergraduate Research:
Cryptography. Preliminary report.
Manmohan Kaur, Benedictine University (1023-97-465)
MAA Session on Building Diversity in Advanced Mathematics: Models that Work, I

8:00 AM – 10:55 AM

Organizers: Patricia Hale, California State Polytechnic University, Pomona; Abbe H. Herzig, University of Albany, SUNY

8:00 AM Case Study: My Experience Teaching Mathematics to a Student Who is Blind.
Richard P Spindler, Bemidji State University (1023-E1-231)

8:20 AM Improving engineering student retention by enhancing their mathematical preparation in a case study at the University of Michigan.
Zhao Chen, Florida Gulf Coast University (1023-97-677)

8:40 AM Summer Undergraduate Research Program at Clayton State University.
Aprillya Lanz, Clayton State University (1023-E1-1797)

9:00 AM Bifurcation and Chaos in One-dimensional Discrete Dynamical Systems (BaC): A National Research Experience for Undergraduates Program Attracting a Diverse Group of Mathematics Students. Preliminary report.
Mazen Shahin*, Delaware State University, and Elena Surovyatkina, Space Research Institute, Russian Academy of Science, and Delaware State University (1023-E1-565)

9:20 AM Coloring Groups in Jersey City and Park City.
Preliminary report.
Brian Hopkins* and Stephanie Charles, Saint Peter's College (1023-E1-1428)

Sarah J. Greenwald* and Katherine Mawhinney*, Appalachian State University (1023-E1-390)

10:00 AM Center for Women in Mathematics at Smith College.
Ruth Haas* and James Henle, Smith College (1023-E1-764)

10:20 AM Advance Program at NMSU: A Formalized Mentoring for STEM faculty.
Tiziana Giorgi, New Mexico State University (1023-E1-1217)

10:40 AM The Importance of Community in Supporting Diverse Learners in Mathematics.
Abbe H. Herzig, University at Albany, State University of New York (1023-E1-481)

MAA Session on Countering "I Can't Do Math": Strategies For Teaching Under-Prepared, Math-Anxious Students, I

8:00 AM – 10:55 AM

Organizers: Winston Crawley, Shippensburg University; Kim Presser, Shippensburg University

8:00 AM Games and Hands-on Activities in Introductory Mathematics Course for Non-Majors.
Annela R Kelly, Roger Williams University (1023-G5-869)

8:20 AM Thinking of Using Software? Why it Works for Us!
Sue R Beck, Morehead State University (1023-G5-242)

8:40 AM I Can Prove It!
J A Hall, Longwood University; Farmville, VA (1023-G5-958)

9:00 AM Engaging Students in Quantitative Reasoning: Activities, Real Data, and Relevant Issues.
Kay Somers* and Alicia Sevilla, Moravian College (1023-G5-678)

9:40 AM Reading, Writing, and How Not to be a Fat Head.
Preliminary report.
Trisha Moller, DeSales University (1023-G5-766)

10:00 AM Break.

Carlo R Bovell, Mercer County Community College (1023-G5-150)

10:40 AM Overcoming Students’ Anxiety With Translation Problems via Polya.
Tim Jacobbe, Clemson University (1023-G5-45)

MAA Session on Teaching Operations Research in the Undergraduate Classroom

8:00 AM – 10:50 AM

Organizers: Gerald Kobylski, United States Military Academy; Steve Horton, United States Military Academy; Christopher J. Lacke, Rowan University; William Fox, Francis Marion University

8:00 AM A Freshman Introduction to Operations Research.
Preliminary report.
Heather Stevenson, United States Military Academy (1023-R1-1775)

8:25 AM Redesign of Undergraduate Mathematical Optimization. Preliminary report.
A. Bathi Kasturiarachi, Kent State University, Stark Campus (1023-R1-1679)

8:50 AM So, You Think That You Have Problems?
Christopher J Lacke, Rowan University (1023-R1-1522)

Jason C McKay* and Ernest Y Wong, United States Military Academy (1023-R1-1447)

DUMMY MONTH 2001
NOTICES OF THE AMS 79
Program of the Sessions – Sunday, January 7 (cont’d.)

9:40AM  Linear Optimization: The Simplex Workbook.  
(1055)  Preliminary report.  
Glenn Hurlbert, Arizona State University  
(1023-R1-938)

10:05AM  Applications of Computer Technology in an  
Undergraduate Probability Curriculum.  Preliminary report.  
Randal E. Hickman, United States Military Academy, West Point, NY (1023-R1-1393)

10:30AM  Teaching Mathematical Modeling/Quantitative Analysis as part of a core sequence to Students without a Calculus.  
William P. Fox, Naval Postgraduate School  
(1023-R1-623)

MAA Session on The Mathematics of Sudoku and Other Puzzles, I

8:00 AM – 10:55 AM  
Organizer: Laura A. Taalman, James Madison University

8:00AM  Cayley-Sudoku tables: An undergraduate research project.  Preliminary report.  
Jennifer Carmichael and Michael B. Ward*, Western Oregon University (1023-M1-298)

8:20AM  Row-Filled Completion Problem for Sudoku Latin Squares.  
Izabela Kanaana*, Sonoma State University, and Bala Ravikumar, Department of Computer Science, Sonoma State University (1023-M1-1559)

8:40AM  A Computer Algorithm for Solving Sudoku.  
Philip A. Cobb, Queensborough Community College (1023-M1-275)

9:00AM  Sudoku Studio.  
Jonathan M Kane, University of Wisconsin – Whitewater (1023-M1-532)

9:20AM  A Java Program to Solve Kakuro Puzzles.  
Charles Ashbacher, Mount Mercy College (1023-M1-493)

9:40AM  A Hard Day’s Knight.  
Joe DeMaio, Kennesaw State University (1023-M1-182)

10:00AM  Classroom Uses for the Game of ”Dots”: A Simple Bridge to Advanced Ideas.  
Carrie Muir, University of Colorado – Boulder (1023-M1-1766)

10:20AM  SET and Combinatorics.  
Anna Bickel and Zsuzsanna Szaniszlo*, Valparaiso University (1023-M1-281)

10:40AM  Using SET to Visualize Higher Mathematics.  
Ben Coleman and Kevin Hartshorn*, Moravian College (1023-M1-1917)

MAA General Contributed Paper Session, V

8:00 AM – 10:55 AM  
Organizers: Eric S. Manland, Appalachian State University  
Jay A. Malmstrom, Oklahoma State Community College

8:00AM  A Closer Look at the Crease Length Problem.  
S F Ellermeyer, Kennesaw State University  
(1023-Z1-213)

8:15AM  Visualizing Elastic Wave Interactions with Multiple Interfaces.  
Richard J. Marchand, Slippery Rock University (1023-Z1-1448)

Kenneth H Luther, Valparaiso University (1023-Z1-575)

8:45AM  Particle Tracking in Three-Dimensional Flows: Evolution and Refinement of a Smooth Surface.  
Paul von Dohlen*, William Paterson University, and Patrick Miller, Stevens Institute of Technology (1023-Z1-1339)

9:00AM  A Glimpse of Infinite-dimensional Tensegrities.  
Ted Ashton, University of Georgia (1023-Z1-1680)

9:15AM  Mathematical modellng of rumor transmission during a dialogue.  
Bernard P Brooks*, Nicholas DiFonzo and David S Ross, Rochester Institute of Technology (1023-Z1-1659)

9:30AM  Seeing sums of single digit numbers.  
Cynthia A Crumb, University of South Alabama, Mobile, AL (1023-Z1-1334)

9:45AM  A Comparison of Online Homework Systems.  
Jessica K. Sklar, Loyola Marymount University (1023-Z1-127)

10:00AM  The Birthday Problem: The Making of a Classic.  
Dale K Hathaway, Olivet Nazarene University (1023-Z1-250)

10:15AM  π to (hundreds of) thousands of digits, from Vieta’s formula.  
Patrick Miller, Stevens Institute of Technology  
(1023-Z1-1659)

10:30AM  Amazing Explorations.  Preliminary report.  
Rick Kreminski, Texas A&M University and Commerce (1023-Z1-585)

10:45AM  Early Nineteenth Century Elementary Algebra Textbooks.  
Andrew B. Perry, Springfield College (1023-Z1-287)

PME Council

8:00 AM – 11:00 AM

MAA Invited Address

9:00 AM – 9:50 AM  
(1079)  The Genome Project for Three-Manifolds.  
Jeffrey F. Brock, Brown University (1023-A0-23)

ASL Invited Address

9:00 AM – 9:50 AM  
(1080)  Reducts of Omega-Categorical Theories.  
Carol S. Wood, Wesleyan University (1023-03-414)

MAA Minicourse #12: Part B

9:00 AM – 11:00 AM  
Combinatorially thinking.  
Organizers: Arthur T. Benjamin, Harvey Mudd College  
Jennifer J. Quinn, Association for Women in Mathematics
MAA Minicourse #1: Part B
9:00 AM – 11:00 AM
Introduction to the mathematics of modern cryptography.
Organizers: Colm K. Mulcahy, Spelman College
Jeffrey Ehme, Spelman College

MAA Minicourse #8: Part B
9:00 AM – 11:00 AM
Mathematics and geometry of voting.
Organizer: Donald G. Saari, University of California Irvine

MAA Session on How to Start and Develop Undergraduate Level Financial Mathematics Programs
9:00 AM – 10:20 AM
Organizer: Youngna Choi, Montclair State University

9:00 AM (1081) Financial Mathematics in a Mathematically Accurate but Accessible Way.
Morteza Shafii-Mousavi, Indiana University South Bend (1023-I5-1528)

Youngna Choi, Montclair State University (1023-I5-1354)

10:00 AM (1083) The Mathematics of Refinancing. Preliminary report.
Youngna Choi and Crystal K Dahlhaus*, Montclair State University (1023-I5-1356)

MAA Panel Discussion
9:00 AM – 10:20 AM
The top ten things you should know if you intend to implement the standards of Beyond Crossroads.
Organizer: Richelle Blair, Lakeland Community College
Panelists: Kathy Mowers, Owensboro Community and Technical College
Robert L. Kimball, Jr, Wake Technical Community College
Brad Chin, West Valley College
Richelle Blair

MAA Panel Discussion
9:00 AM – 10:20 AM
Calculus, liberal arts, and quantitative literacy.
Organizer: Richard A. Gillman, Valparaiso University
Panelists: William E. Briggs, University of Colorado, Denver
Deborah Hughes-Hallett, University of Arizona
Michael Starbird, University of Texas at Austin
Richard A. Gillman

Project NExT Panel Discussion
9:00 AM – 10:30 AM
Publishing undergraduate research and expository articles.
Organizers: Chawne M. Kimber, Lafayette College
Kimberly A. Roth, Wheeling Jesuit University

Panelists: Ezra A. Brown, Virginia Polytechnic Institute & State University
Paul J. Campbell, Beloit College
Clifford A. Reiter, Lafayette College
Jody Sorensen, Augsburg College

AMS Special Presentation on Congressional Fellowships
9:30 AM – 10:55 AM
Learn about this program and speak with former Fellows.
Organizer: Samuel M. Rankin, III, AMS
Presenters: David Weinreich, AMS Congressional Fellow 2005-06
Dan Ullman, AMS Congressional Fellow 2006-07

Exhibits and Book Sales
9:30 AM – 5:30 PM

ASL Invited Address
10:00 AM – 10:50 AM
(1084) Almost everywhere domination.
Reed Solomon, University of Connecticut, Storrs (1023-03-413)

Math on the Web, III
10:00 AM – 5:05 PM
10:00 AM (1085) Project CALC on the Web.
David Smith, Duke University

12:30 PM (1086) The MathFind search engine.
Robert Miner, Design Science, Inc.

1:15 PM (1087) Interactive math on the Web by Maplesoft.
Mohamed Bendame, Maplesoft

2:00 PM (1088) Online assessment and problem-solving environments: The advantages of using content MathML.
Don DeLand, Integre Technical Publishing Co.

2:45 PM (1089) PlanetMath and free mathematics.
Aaron Krowne, Emory University

3:15 PM (1090) Using MathML with Blackboard and WebCT.
Bob Mathews, Design Science, Inc.

4:00 PM (1091) WebALT online courses.
Mika Seppälä, WebALT

4:45 PM (1092) Techniques for using the equation editor in Blackboard and WebCT.
Bob Mathews, Design Science, Inc.

AMS Invited Address
10:05 AM – 10:55 AM
(1093) Extensions of Hilbert’s Tenth Problem.
Bjorn Poonen, University of California, Berkeley (1023-03-06)
AMS-MAA Invited Address

11:10 AM – NOON
(1094) Statistics for smart people who don’t know anything about statistics.
Peri W. Diaconis, Stanford University (1023-62-32)

AMS Colloquium Lecture: Lecture III

1:00 PM – 2:00 PM
(1095) Limit shapes, real and imagined, III: Instantons, and how random surfaces count them.
Andrei Okounkov, Princeton University (1023-60-04)

ASL Invited Address

1:00 PM – 1:50 PM
(1096) Independence and equiconsistency results in intuitionistic set theory.
Michael Rathjen, Ohio State University and University of Leeds (1023-03-412)

MAA Student Lecture

1:00 PM – 1:50 PM
Della D. Fenster, University of Richmond (1023-A0-24)

AMS Current Events Bulletin

1:00 PM – 4:45 PM
Organizer: David Eisenbud, Mathematical Sciences Research Institute

1:00PM
(1098) Barcodes: The Persistent Topology of Data.
Robert Ghrist, University of Illinois, Urbana-Champaign (1023-55-1038)

2:00PM
(1099) Flows on the space of lattices: work of Einsiedler, Katok and Lindenstrauss.
Akshay Venkatesh, Courant Institute of Mathematical Sciences (1023-37-778)

3:00PM
(1100) From harmonic analysis to arithmetic combinatorics.
Izabella Laba, UBC (1023-42-1431)

4:00PM
(1101) The structure of error terms in number theory and an introduction to the Sato-Tate Conjecture.
Barry Mazur, Harvard University (1023-11-1245)

AMS-MAA-SIAM Special Session on Research in Mathematics by Undergraduates, IV

1:00 PM – 5:55 PM
Organizers: Darren A. Narayan, Rochester Institute of Technology
Carl V. Lutzer, Rochester Institute of Technology
Bernard Brooks, Rochester Institute of Technology
Tamás I. Wiandt, Rochester Institute of Technology
Michael J. Fisher, California State University, Fresno

1:00PM
(1102) Computational Efficiency in Weyl Groups.
Preliminary report.
Patricia R. Cahn*, Juan Li, Smith College, and Jeremy Schwartz, Brandeis University (1023-08-1056)

1:30PM
(1103) An equivalent characterization of half-factorial restricted block monoids over ℤ and torsion groups, with applications to factorization in Dedekind domains.
R. D. Kravitz, Williams College (1023-13-132)

2:00PM
(1104) Matrix Generation of the Diophantine Solutions to Sums of 3 ≤ n ≤ 9 Squares that are Square.
Jordan O. Tirrell* and Clifford A. Reiter, Lafayette College (1023-11-626)

2:30PM
(1105) Looking for Patterns in Multinomial Coefficients.
Igor Konkisakher*, Washington University in St. Louis, and Michael Wijaya, University of Rochester (1023-11-472)

3:00PM
(1106) Number Base Representations in the Gaussian Integers.
Preliminary report.
Heather J. Langdon, St. Mary’s College of Maryland (1023-11-854)

3:30PM
(1107) Orders at Infinity of Modular Forms with Heegner Divisors.
Carl Erickson*, Stanford University, Alison Miller, Harvard University, and Aaron Pixton, Princeton University (1023-11-80)

4:00PM
(1108) The number of ways of expressing t as a binomial coefficient.
Daniel Mertz Kane, Massachusetts Institute of Technology (1023-11-1083)

4:30PM
(1109) Realizations of subspaces of \( L_p \), \( p > 2 \), with norm given by partitions and weights.
Brandon P. Barrette* and Simei Tong, University of Wisconsin-Eau Claire (1023-46-86)

5:00PM
(1110) Surfaces with Density and their Isoperimetric Regions.
Preliminary report.
Robin S. Walters, Harvard University (1023-53-898)

5:30PM
(1111) Self-similar periodic tilings of nilpotent Lie groups.
James J. Rohal*, College of Wooster, and William P. Hudelson, University of Notre Dame (1023-22-808)

AMS-MAA Special Session on History of Mathematics, II

1:00 PM – 5:55 PM
Organizers: Joseph W. Dauben, Lehman College
Patti Hunter, Westmont College
Victor J. Katz, University of the District of Columbia
Karen H. Parshall, University of Virginia

1:00PM
(1112) The ellipse seen from China.
Preliminary report.
Andrew B. Breard, Université des Sciences et Technologies de Lille; Laboratoire Paul Painlevé (1023-11-80)

1:30PM
(1113) The Other Book Nobody Read: Georg Rheticus and the Opus Palatinum.
Preliminary report.
Glen R Van Brummelen, Quest University (1023-01-749)

2:00PM
(1114) Communicating Mathematics in the Journal des savants (1675-1737).
Jeanne Peiffer, CNRS Paris (1023-01-1077)

2:30PM
(1115) Problems of Infinitesimals: Descartes, Leibniz, and Peirce.
Maria Sol de Mora, University of Basque Country (1023-01-610)
3:00 PM  Motivation and Context for B. Peirce’s Linear
Associate Algebra. Preliminary report.
Deborah A. Kent, Simon Fraser University
(1023-01-683)

3:30 PM  Robert Leslie Ellis on the misuse of the principle of
insufficient reason.
Byron E. Wall, York University, Toronto, Canada
(1023-01-946)

4:00 PM  The Mittag-Leffler Theorem: Interpretation and
Reception of a Mathematical Result, 1876-1884.
Preliminary report.
Laura E Turner* and Thomas Archibald, Simon
Fraser University (1023-01-291)

4:30 PM  A Political and Mathematical Unification: The Case
of Nineteenth-Century Italy.
Laura Martini, Siena, Italy (1023-01-296)

5:00 PM  Mathematics in Brazil during the first half of
the 20th century: institutionalization and
professionalization.
Sergio Nobre, UNESP - Rio Claro - Brazil
(1023-01-722)

5:30 PM  Mathematics and pacifism in Cambridge
1915-1916: a student perspective.
June Barrow-Green, The Open University, Milton
Keynes, UK (1023-01-226)

AMS Special Session on Frames and Wavelets in
Harmonic Analysis, Geometry, and Applications, II

1:00 PM – 5:50 PM

Organizers:  Palle E. T. Jorgensen, University of
Iowa
David R. Larson, Texas A&M University
Peter R. Massopust, Institute of Biomathematics and
Biometry, Neuberger, and Technical University of
Munich
Gestur Olafsson, Louisiana State University

1:00 PM  Pointwise comparison of pulse code and
Sigma-Delta modulation.
John J Benedetto*, Norbert Wiener Center,
University of Maryland, College Park, and Onur
Oktay, University of Maryland, College Park
(1023-42-437)

1:30 PM  Maximally Equiangular Frames and Finite Wigner
Distributions.
Matthew Fickus, Air Force Institute of Technology
(1023-42-843)

2:00 PM  Causal Relationships Between Frames. Preliminary
report.
Troy Henderson*, United States Military Academy,
and David R Larson, Texas A&M University
(1023-47-978)

2:30 PM  Orthogonal wavelets centered on an arbitrary knot
sequence.
Derek Bruff, Vanderbilt University, Jeffrey
Geronimo, Georgia Institute of Technology, and
Doug Hardin*, Vanderbilt University
(1023-41-1503)

3:00 PM  Texture Identification of Tissues Using Directional
Wavelet, Ridgelet and Curvelet Transforms.
Ahmed I. Zayed* and Lucia Dettori, DePaul
University (1023-42-320)

3:30 PM  A characteristic equation of semiorthogonal
Parseval wavelets. Preliminary report.
Veronika Furst, University of Arizona
(1023-43-1566)

4:00 PM  Wavelet Sets with Nonexpanding Dilation Matrices.
Yang Wang*, Georgia Institute of Technology, and
Eugene Ionascu, Columbus State University
(1023-42-468)

4:30 PM  Surgery and push-outs on frames. Preliminary
report.
David R Larson and Nga Q Nguyen*, Texas A&M
University (1023-46-695)

5:00 PM  Isotropic Multiresolution Analysis.
Simon K. Alexander, Shika Baid, Saurabh Jain,
Juan R. Romero and Manos Papadakis*, University of
Houston (1023-42-885)

5:30 PM  Gelfand triples and time frequency analysis.
Preliminary report.
Jens Gerlach Christensen* and Gestur Olafsson,
Louisiana State University (1023-43-1762)

AMS Special Session on Group Representations,
Ergodic Theory, and Mathematical Physics: Honoring
the Memory of George W. Mackey, II

1:00 PM – 5:45 PM

Organizers:  Robert S. Doran, Texas Christian
University
Calvin C. Moore, University of
California Berkeley
Robert J. Zimmer, The University of Chicago

1:00 PM  Induced Actions.
Robert J. Zimmer, University of Chicago
(1023-22-68)

2:00 PM  From Lorentzian dynamics to the decay of matrix
coefficients.
Scot Adams, University of Minnesota (1023-37-241)

2:30 PM  Cohomology of measurable cocycles. Preliminary
report.
Alex Furman, University of Illinois at Chicago
(1023-37-780)

3:00 PM  The Work of G. W. Mackey on Unitary
Representations of Group Extensions.
Arlan Ramsay, University of Colorado, Boulder
(1023-46-580)

3:30 PM  The Mackey Dichotomy in Classification Problems.
Edward G. Effros, UCLA (1023-46-233)

4:00 PM  MASA’s and certain type I closed faces of
C*- algebras.
Lawrence G. Brown, Purdue University
(1023-46-760)

4:30 PM  Groupoid Methods in Wavelet Analysis.
Marius Ionescu, Dartmouth College, and Paul S.
Muhly*, University of Iowa (1023-46-663)

5:00 PM  Quantum Fields and George Mackey.
Preliminary report.
Arthur Jaffe, Harvard University (1023-00-225)

AMS Special Session on Infinite Dimensional Analysis
Honor H.-H. Kuo, II

1:00 PM – 5:20 PM

Organizers:  Ambar N. Sengupta, Louisiana State
University
P. Sundar, Louisiana State University

1:00 PM  Nonlinear maps of Wiener processes.
Leonard Gross, Cornell University (1023-46-1511)

1:30 PM  Examples of Stochastic Flows in Non-Commutative
Manifolds.
Kalyan B. Sinha, J.N.Centre for Advanced Scientific
Research, Jakkur, Bangalore, India. (1023-60-1344)
AMS Special Session on Nonlinear Variational Inclusion Problems and Optimization Theory, II

1:00 PM – 3:45 PM
Organizer: Ram U. Verma, University of Toledo, and International Publications

1:00 PM ►

Organizer: George X Yuan, Management School, Chinese Academy of Science, Beijing, China (1023-91-137)

1:00 PM

Organizer: George X Yuan, Management School, Chinese Academy of Science, Beijing, China (1023-91-137)

2:00 PM
Sensitivity Analysis for Cocoercively Monotone Variational Inclusions.

Organizer: R N Mohapatra and Ram U Verma, University of Central Florida (1023-49-972)

2:00 PM
Sensitivity Analysis for Cocoercively Monotone Variational Inclusions.

Organizer: R N Mohapatra and Ram U Verma, University of Central Florida (1023-49-972)

3:00 PM
Identification of Nonlinearities in Divergence Type Elliptic Boundary Value Problems.

Organizer: Mirecea D. Voisei, The University of Texas - Pan American (1023-49-55)

3:00 PM
Identification of Nonlinearities in Divergence Type Elliptic Boundary Value Problems.

Organizer: Mirecea D. Voisei, The University of Texas - Pan American (1023-49-55)

AMS Special Session on Nonsmooth Analysis in Inverse and Variational Problems, I

1:00 PM – 6:25 PM
Organizers: M. Zuhair Nashed, University of Central Florida
Otmar Scherzer, University of Innsbruck

1:00 PM
Variational problems for measure-valued Lagrangians.

Organizer: Umberto Mosco, Worcester Polytechnic Institute (1023-35-984)

1:00 PM
Variational problems for measure-valued Lagrangians.

Organizer: Umberto Mosco, Worcester Polytechnic Institute (1023-35-984)

1:30 PM
Travel Time Tomography and Lens Rigidity.

Organizer: Gunther Uhlmann, University of Washington (1023-58-1401)

1:30 PM
Travel Time Tomography and Lens Rigidity.

Organizer: Gunther Uhlmann, University of Washington (1023-58-1401)

2:00 PM
Ultrasound Absorption vs. Causality & Hyperbolicity.

Organizer: Sarah K Patch, Department of Physics, UW Milwaukee (1023-44-1239)

2:00 PM
Ultrasound Absorption vs. Causality & Hyperbolicity.

Organizer: Sarah K Patch, Department of Physics, UW Milwaukee (1023-44-1239)

2:30 PM
Preliminary report.

Organizer: Gunther Uhlmann, University of Washington (1023-58-1401)

2:30 PM
Preliminary report.

Organizer: Gunther Uhlmann, University of Washington (1023-58-1401)

AMS Special Session on Numerical Relativity, II

1:00 PM – 5:55 PM
Organizers: Alexander M. Alekseeenko, California State University Northridge
Arup Mukherjee, Montclair State University

1:00 PM
Binary Black Hole Simulations and the Hunt for Gravitational Waves.

Organizer: Pablo Laguna and Deirdre M. Shoemaker, Penn State University (1023-83-1145)

1:00 PM
Binary Black Hole Simulations and the Hunt for Gravitational Waves.

Organizer: Pablo Laguna and Deirdre M. Shoemaker, Penn State University (1023-83-1145)

2:00 PM

Organizer: Blake Temple, University of California, Davis (1023-65-1882)

2:00 PM

Organizer: Blake Temple, University of California, Davis (1023-65-1882)

2:30 PM
A minimization problem for the lapse and the initial-boundary value problem for Einstein’s field equations.

Organizer: Gabriel Nagy, University of California at San Diego, and Olivier Sarbach, Universidad Michoacana de San Nicolas de Hidalgo (1023-83-372)

2:30 PM
A minimization problem for the lapse and the initial-boundary value problem for Einstein’s field equations.

Organizer: Gabriel Nagy, University of California at San Diego, and Olivier Sarbach, Universidad Michoacana de San Nicolas de Hidalgo (1023-83-372)

3:00 PM
Geometric discretisation of General Relativity.

Organizer: Jörg Frauendiener, Institut für Astronomie und Astrophysik, Universität Tübingen (1023-83-1014)

3:00 PM
Geometric discretisation of General Relativity.

Organizer: Jörg Frauendiener, Institut für Astronomie und Astrophysik, Universität Tübingen (1023-83-1014)

3:30 PM
Towards absorbing outer boundaries in General Relativity.

Organizer: Luisa T. Buchman, Center for Relativity, University of Texas at Austin, and Olivier C. A. Sarbach, Universidad Michoacana de San Nicolas de Hidalgo (1023-83-1265)

3:30 PM
Towards absorbing outer boundaries in General Relativity.

Organizer: Luisa T. Buchman, Center for Relativity, University of Texas at Austin, and Olivier C. A. Sarbach, Universidad Michoacana de San Nicolas de Hidalgo (1023-83-1265)

4:00 PM
Some Results on Constraints in GR.

Organizer: Michael J. Holst, UC San Diego (1023-83-1861)

4:00 PM
Some Results on Constraints in GR.

Organizer: Michael J. Holst, UC San Diego (1023-83-1861)
AMS Special Session on Arithmetic of Function Fields, II

1:00 PM – 5:55 PM

Organizers: Allison M. Pacelli, Williams College
Michael J. Rosen, Brown University

1:00PM
Isogenous elliptic factors in the Jacobians of curves.
Jennifer Paulhus, University of Illinois at Urbana-Champaign (1023-11-916)

1:30PM
Special values of equivariant $p$-adic and global $L$-functions. Preliminary report.
Cristian D. Popescu, University of California at San Diego (1023-11-1005)

2:00PM
Hecke Operators and $L$-series in Characteristic $p$.
David M. Goss, Ohio State University (1023-11-451)

2:30PM
Simultaneous Prime Values of Polynomials in Positive Characteristic.
Paul Pollack, Dartmouth College (1023-11-1359)

3:00PM
Variations of the Sato-Tate Conjecture. Preliminary report.
Ram Murty, Queen’s University, Kingston, Ontario, Canada (1023-11-794)

4:00PM
Biquadratic Function Fields.
Qingquan Wu, University of Illinois at Urbana-Champaign, and Renate Scheidler*, University of Calgary (1023-11-1160)

4:30PM
Approximating Euler Products and Computing the Class Number of an Algebraic Function Field.
Andreas Stein, University of Wyoming (1023-11-1039)

5:00PM
Galois Theory for the line over finite fields.
Jing Long Hoelscher, University of Pennsylvania (1023-14-893)

5:30PM
The Euclidean Algorithm and Applications to Hyperbolic Geometry.
Kathleen Petersen, Queen’s University (1023-11-1584)

AMS Special Session on Universal Algebra and Order, II

1:00 PM – 5:50 PM

Organizers: John W. Snow, Sam Houston State University
Japheth Wood, Bard College

1:00PM
Can We Change the Paradigm for Reconstruction?
Bernd S. W. Schroeder, Louisiana Tech University (1023-06-221)

1:30PM
Aditya K. Nagrath, University of Denver (1023-06-200)

2:00PM
The Coadunation of Generalized Crowns.
Rebecca Garcia, Sam Houston State University (1023-06-428)

2:30PM
Minimal extensions of bounded distributive lattices. Preliminary report.
M. E. Adams*, State University of New York at New Paltz, and Jürg Schmid, University of Bern (1023-06-785)

3:00PM
Lyndon’s algebras and the equational complexity of $\mathbb{R}$A. Preliminary report.
Jeremy F Alm, Department of Philosophy, Iowa State University (1023-03-495)

3:30PM
A result on Complete Hausdorffness in topological algebras.
Wolfram Benz, University of Northern British Columbia (1023-08-434)

4:00PM
Minimal generating band semigroups. Preliminary report.
Japheth Wood, Bard College (1023-08-380)

4:30PM
The free spectrum of the Perkins semigroup is sub-log-exponential.
Steve Seif, University of Louisville (1023-08-385)

5:00PM
There is no algorithm for deciding whether an equation is compatible with the real line. Preliminary report.
George F McNulty, University of South Carolina (1023-08-671)

5:30PM
Full natural dualities.
David M. Clark, SUNY New Paltz, Brian A. Davey, Jane G. Pitkethly, La Trobe University, and Ross D. Willard*, University of Waterloo (1023-08-1355)

AMS Special Session on Microlocal Analysis and Singular Spaces, III

1:00 PM – 4:40 PM

Organizers: Paul A. Loya, Binghamton University
Andras Vasy, Massachusetts Institute of Technology

1:00PM
Elliptic boundary problems on a class of noncompact manifolds.
Thomas Krainer, Penn State Altoona (1023-35-1899)

2:00PM
On the heat trace for cone operators. Preliminary report.
Juan B Gil, Penn State Altoona (1023-58-1308)

3:00PM
Hypoellipticity of $\Box_b$ and vanishing of cohomology. Preliminary report.
Gerardo A Mendoza, Temple University (1023-58-685)

4:00PM
Discussion.

AMS Special Session on Continuous and Discrete Integrable Systems and Their Applications, II

1:00 PM – 6:15 PM

Organizers: Wen-Xiu Ma, University of South Florida
Taixi Xu, Southern Polytechnic State University
Bao-Feng Feng, University of Texas-Pan American
Zhijun Qiao, University of Texas-Pan American
Program of the Sessions – Sunday, January 7 (cont’d.)

MAA Minicourse #15: Part A

1:00 PM – 5:00 PM

Geometry with history for teaching teachers.
Organizers: David W. Henderson, Cornell University
Daina Taimina, Cornell University

MAA Minicourse #2: Part B

1:00 PM – 3:00 PM

Some deterministic models in mathematical biology and their simulations.
Organizers: James F. Selgrade, North Carolina State University
Cammy E. Cole, Meredith College
Hüseyin Koçak, University of Miami, Coral Gables

MAA Minicourse #7: Part B

1:00 PM – 3:00 PM

Directing undergraduate research.
Organizer: Aparna W. Higgins, University of Dayton

AMS Session on Algebra and Group Theory, III

1:00 PM – 5:40 PM

Construction of the irreducible characters of the Heisenberg group and a similar special group.
Mohammad Reza Darafsheh, University of Tehran, Iran, and Manouchehr Misaghian*, Johnson C. Smith University (1023-20-1493)

Graph Braid Groups.
Daniel S Farley*, Miami University of Ohio, and Lucas Sabalka, University of California, Davis (1023-20-1518)

Almost pure subgroups of locally compact abelian groups. Preliminary report.
Peter Loth, Sacred Heart University (1023-20-263)

The Strong Symmetric Genus of the Finite Coxeter Groups.
Michael A Jackson, King College (1023-20-371)

Capability of p-nilpotent products of cyclic p-groups.
Arturo Magidin, University of Louisiana at Lafayette (1023-20-38)

Zassenhaus Rings of Finite Rank.
Joshua Buckner, Baylor University (1023-20-420)

Central Extensions and Unramified Brauer Groups.
Fedor Bogomolov, CIMS-New York University, and Jorge Maciel*, BMCC-The City University of New York (1023-20-519)

Break

Local Characterization of LFS-Groups of p-Type. Preliminary report.
Stefaan D Delcroix, California State University, Fresno (1023-20-596)

For a given prime p, what is the smallest nonabelian simple group whose order is divisible by p?
Gabriela Mendoza, State University of New York at Binghamton (1023-20-680)

Variations on a Theme by Desmond MacHale.
Luise-Charlotte Kappe*, Gabriela Mendoza, State University of New York at Binghamton, and Michael Ward, Western Oregon University (1023-20-682)

Subgroups in a Direct Product that Satisfy the Strong Frattini Argument.
Joseph Evan, King’s College (1023-20-774)

On the Sources of Simple Modules in Certain Blocks.
Adam D Salminen, University of Evansville (1023-20-99)

Donald R King, Northeastern University (1023-22-1597)

Completions of altered topological subgroups of $\mathbb{R}^n$.
Jon W. Short, Sam Houston State University (1023-22-1610)
AMS Session on Combinatorics, II

1:00 PM – 5:40 PM

1:00PM Constructing m-articulate collections of de Bruijn sequences.
Atoshi Chowdhury, Princeton University (1023-05-1383)

Alison M. Marr, Southern Illinois University (1023-05-1385)

1:30PM Helly and Radon independence in Clone-Free Multitournament. Preliminary report.
Darren B. Parker*, University of Dayton, Randy F. Westhoff and Marty J. Wolf, Bemidji State University (1023-05-1469)

1:45PM Minimum cycle bases of direct products of bipartite graphs.
Richard Hammack, Virginia Commonwealth University (1023-05-1472)

2:00PM Enumeration of Orientable Embeddings of Odd Graphs.
Brent N Stephens* and Xiaoya Zha, Middle Tennessee State University (1023-05-1512)

2:15PM Extending the Freiman 3k – 3 Theorem to distinct sets. Preliminary report.
David J. Grynkiewicz*, Oriol Serra, Universitat Politècnica de Catalunya, Spain, and Yahya Hamidoune, Université de Paris VI (1023-05-1526)

2:30PM Density Relations in Simple Graphs.
Daniel Felix, University of California, San Diego (1023-05-1602)

2:45PM Generating tree isomorphisms for pattern-avoiding involutions.
Aaron D. Jaggard*, Tulane University, and Joseph J. Marincel, Washington University (1023-05-1618)

3:00PM Combinatorial Methods in Coordinate Percolation. Preliminary report.
Elizabeth Moseman, Dartmouth College (1023-05-1619)

3:15PM Geometric structure of sumsets within their convex hulls.
Jaewoo Lee, Northeastern University (1023-05-1412)

3:30PM Intersection Graphs Generated By An Edge Decomposition.
Robert A. Beeler, Clemson University (1023-05-1651)

3:45PM G-Multiparking Functions and Dirichlet Configurations.
Dimtrij N Kostic, Texas A&M University (1023-05-1705)

4:00PM Interval Avoidance in the Symmetric Group.
Isaiah P. Lankham* and Alexander K. Woo, UC Davis (1023-05-1711)

4:15PM The Jump Number of a Split Graph.
Mike Fisher, California State University, Fresno (1023-05-1842)

AMS Session on Analysis and Functional Analysis, II

1:00 PM – 5:25 PM

1:00PM Rellich type inequality on Carnot Groups.
Ismail Kombe, Oklahoma City University (1023-43-1180)

Abebaw Tadesse, Langston University (1023-43-336)

1:30PM Transference of Maximal Multiplier Operators on Local Hardy-Lorentz Spaces.
Xiaoyue Luo* and P. K. Lamm, Michigan State University (1023-45-1685)

2:15PM A Poincaré inequality on the complex sphere in CR setting.
Bogdan Costin Visinescu, University of Wisconsin, River Falls, and Paul Lewis, University of North Texas, TX (1023-46-1223)

2:45PM A Dynamic Equation on a Time Scale.
Allan C. Peterson*, University of Nebraska-Lincoln 68588-0130, Lynn Erbe, University of Nebraska, and Samir Saker, Mansoura University (1023-39-748)

3:00PM Topological Structure of the Unitary Group of Certain C*-Algebras.
Bogdan Costin Visinescu, University of Cincinnati (1023-46-1408)

3:15PM On the Rellich inequality.
Ritva M. Hurri-Syrjänien*, University of Helsinki, and David E. Edmunds, Cardiff University (1023-46-1496)

3:30PM On Ergodic type theorems for finite Jordan algebras.
Genady Ya. Grabarnik, TJ. Watson IBM Research Center, Alexander A. Katz*, St. John’s University, and Laura Shwartz, University of South Africa (1023-46-1737)

DUMMY MONTH 2001 NOTICES OF THE AMS 87
AMS Session on Geometry and Topology, IV

1:00 PM – 5:55 PM

1:00 PM
The locally finite functor and the Steenrod algebra.
Hayden Harker, Vassar College (1023-55-1590)

1:15 PM
Gorenstein type theorem for representations of nuclear bicommuting C*-algebras.
Alexander A. Katz, St. John’s University, Oleg Friedman, University of South Africa, and Roman Kushnir, St. John’s University (1023-46-980)

1:30 PM
Local Conditions for a 2-dimensional Duality Group.
Alan Durfee, Mount Holyoke College (1023-46-1159)

1:45 PM
Relative Homotopy Groups of Modules - from a Different Viewpoint.
C. Joanna Su, Providence College (1023-55-1787)

2:00 PM
Periodic Dold Sequences.
Michael W. Chrisman, University of Hawaii at Manoa (1023-55-1342)

2:15 PM
Rank of the fundamental group of any component of a function space.
Samuel B. Smith*, Saint Joseph’s University, and Gregory Lupton, Cleveland State University (1023-55-1880)

2:30 PM
Comparing self-avoiding walks and polygons on hyperbolic Coxeter groups.
Jason S. Bode, Cornell University (1023-55-795)

2:45 PM
Break.

3:00 PM
Kauffman-Harary Conjecture for Virtual Knots.
Mathew Williamson, University of South Florida (1023-55-911)

3:15 PM
Polynomial knots. Preliminary report.
Alan Durfee, Mount Holyoke College (1023-55-1159)

3:30 PM
Menasco normal form and recognizing unknot diagrams.
Chan-Ho Suh, University of California at Davis (1023-55-1335)

3:45 PM
Coloring Random Knots. Preliminary report.
Enver Karadag, University of South Florida (1023-57-1386)

4:00 PM
Stable Ribbon Graphs and Quantum Master Equation. Preliminary report.
J. Javier Zuniga, University of Minnesota (1023-57-1548)

4:15 PM
Turaev torsion and cohomology determinants for 3-manifolds with boundary. Preliminary report.
Christopher B. Truman, University of Maryland (1023-57-1755)

4:30 PM
Statistical methods for studying spatial properties of random polygonal knots.
Eric J Rawdon, University of St. Thomas (1023-57-939)

4:45 PM
Residue Formulation of the Chern Character on Smooth Manifolds.
Dmitry M. Gerenrot, Georgia Institute of Technology (1023-58-1471)

5:00 PM
Singularities of equivariant lagrangian mean curvature flow.
Konrad Groh, Institut fuer Differentialgeometrie, Hannover (1023-58-339)

5:15 PM
Dehn surgery on singular knots.
Simrat M. Ghuman, San Francisco, California, Larry M. Granda*, and Chichen M. Tsau, Saint Louis University (1023-57-74)

5:30 PM
Generalized Coloring and n-String Tangles.
Isabel K. Darcy, University of Iowa, and Junaly P. Navarra-Madsen*, Texas Woman’s University (1023-57-111)

5:45 PM
Upper Bounds for Regular Stick Numbers of Torus Knots. Preliminary report.
Timothy D. Comar* and Debra Witczak, Benedictine University (1023-57-113)

MAA Session on Teaching Innovations in Real Analysis, II

1:00 PM – 3:35 PM

1:00 PM
Getting students to prove theorems in analysis.
William S. Mahavier, Emory University (1023-58-1527)

1:20 PM
When I switched from Lecturing to using the Moore Method...
Bernd E. Rossa, Ashford University (1023-58-1572)

1:40 PM
Michael L. Berry, University of North Carolina at Asheville (1023-58-1572)

2:00 PM
Technical illustration for second semester real analysis.
Mark McClure, University of North Carolina at Asheville (1023-58-844)

2:20 PM
Using History to Understand How To Teach Real Analysis.
Robert Rogers, SUNY Fredonia (1023-58-758)
**MAA Session on Mathematics Experiences in Business, Industry and Government**

**1:00 PM - 4:30 PM**

Organizers: Philip E. Gustafson, Mesa State College
Michael Monticino, University of North Texas

1:00PM Opening Remarks and SIGMAA Announcements.

1:15PM Preliminary report. Teller Staffing in Retail Banks. Travis Cogdill and Michael Monticino, University of North Texas (1023-L1-1405)


1:55PM Fractal measures to quantify agent-based combat with ENSTein. David S. Mazel, Technology Service Corporation, and Andy Ilachinski, The CNA Corporation (1023-L1-500)

2:15PM Characterizing internal stress states in advanced ceramics using fractal analysis. Preliminary report. Leigh L Noble, United States Military Academy & Army Research Lab (1023-L1-1753)


2:55PM Norbert Wiener Center - mission and methods. John J Benedetto and Ioannis Konstantinidis, Norbert Wiener Center, University of Maryland, College Park (1023-L1-1455)


3:35PM Why Consulting Firms need Mathematicians. Carla D Martin, James Madison University (1023-L1-223)

3:55PM My Experiences as a Summer Contract Employee at a Pharmaceutical Company. Paul R. Coe, Dominican University (1023-L1-1857)


**MAA Session on Building Diversity in Advanced Mathematics: Models that Work, II**

**1:00 PM - 3:55 PM**

Organizers: Patricia Hale, California State Polytechnic University, Pomona
Abbe H. Herzig, University of Albany, SUNY

1:00PM Successful Practices on Integrating Diversity into the Teaching of General Education Mathematics courses at Northern State University. A. S. Elkhaled, Northern State University (1023-E1-1211)

1:20PM Project SMART III - Characteristics of a Successful NREUP at a Two-Year Institution. John J Morrell, Atlanta Metropolitan College (1023-E1-1636)

1:40PM A "DeVry-Style" REU: The Outcome of a Summer Semester of Undergraduate Research in Probability and Networking at DeVry. Dov N Chelst, DeVry University (1023-E1-1835)

2:00PM Strategies for Inclusion in the UC Davis Math Modeling Experience for Undergraduates and High School Students. Preliminary report. Sarah A. Williams, Graduate Group in Applied Mathematics, University of California, Davis (1023-E1-1739)

2:20PM Academic Excellence Workshops, Why They Work at Cal Poly Pomona. Patricia Hale, California State Polytechnic University, Pomona (1023-E1-1176)

2:40PM Native American-based Materials for Undergraduate Mathematics Courses. Charles Peter Funkhouser, University of Montana Missoula, and A. Duane Porter, University of Wyoming (1023-E1-59)

3:00PM A Diversity Perspective. Satish C Bhatnagar, University of Nevada Las Vegas (1023-E1-283)


3:40PM From the Perspective of Lee Lorch. Lee Lorch, York University (1023-E1-1552)

**MAA Session on Countering "I Can't Do Math": Strategies For Teaching Under-Prepared, Math-Anxious Students, II**

**1:00 PM - 5:15 PM**

Organizers: Winston Crawley, Shippensburg University
Kim Presser, Shippensburg University

1:00PM How Can I Help My Students Enjoy Learning Mathematics Instead of Being Afraid of It? Fostering Positive Mathematics Experiences With Special Needs and English Language Learner Populations. Joyce F. Fischer, Texas State University-San Marcos (1023-G5-1312)

1:20PM Linking Polynomials to Whole Numbers to Ease the Anxiety of the Under-Prepared Students. Murray H. Siegel, SC GSSM (1023-G5-210)

1:40PM Engaging Developmental Mathematics Students with Activities: A First Look at Quadratics. Gary Simundza, Wentworth Institute of Technology, and Nancy Crisler, Washington University (1023-G5-66)

2:00PM How to improve student's performance in Developmental Mathematics course with the use of computer-aided instruction and a personal touch. Wendiaan Sethi, Seton Hall University (1023-G5-1168)
Program of the Sessions – Sunday, January 7 (cont’d.)

2:20PM  Changing Paradigms: A department in a state of flux leading to technology transitions which affect student learning. Preliminary report.  
Hassan Moore* and Gerald Y. Agbegha, Johnson C. Smith University (1023-G5-1638)  

Carrie Muir, University of Colorado - Boulder (1023-G5-1777)  

3:00PM  Improving Student Performance in a College Core Math Program by Emphasizing Fundamental Mathematical Skills. Preliminary report.  
Heather Stevenson* and Gerald Kobylski, United States Military Academy (1023-G5-1714)  

3:20PM  The Thrill of Victory: Conquering Anxiety with Mastery Grading.  
Penelope H Dunham, Muhlenberg College (1023-G5-1113)  

3:40PM  Transitioning to College Mathematics - Creating a Program to Help Developmental Level Students Succeed in College Level Mathematics. Preliminary report.  
J. Winston Crawley* and Kimberly J. Presser, Shippensburg University (1023-G5-881)  

4:00PM  Strategies for Reaching Under-prepared Math Students.  
Ann C Hanson, Columbia College (1023-G5-621)  

4:20PM  Learning Disabilities and the Post-Secondary Math Student.  
Mary Rack, Johnson County Community College (1023-G5-101)  

Teodora B Cox, SUNY Fredonia (1023-G5-1759)  

5:00PM  For Victims Of The Mathematics-Distress Syndrome: A Radical Alternative Curriculum. Preliminary report.  
Clyde Greeno, The MAEI Mathematics Institute (1023-G5-925)  

MAA Session on Innovative Examples of Using Graphs in Statistics  

1:00PM - 5:30PM  
Organizers: Christopher J. Lacke, Rowan University  
Ginger Holmes Rowell, Middle Tennessee State University  

1:00PM  Statistics Before Your Eyes: Photographs of Statistical Concepts.  
Robert W. Jernigan, American University (1023-J5-834)  

Sheldon P. Gordon, Farmingdale State University of New York, and Florence S. Gordon*, New York Institute of Technology (Retired) (1023-J5-452)  

1:50PM  What is $R^2$ Using Dynamic Graphs to Illustrate Ideas in Regression.  
Robin H. Lock, St. Lawrence University (1023-J5-1451)  

2:15PM  Using Boxplots and Histograms to Draw Inferences.  
Kris H, Green, St. John Fisher College (1023-J5-509)  

2:40PM  Using Graphs To Assess Normality When Performing a t-Test for a Population Mean.  
Christopher J Lacke, Rowan University (1023-J5-1459)  

3:05PM  Using Dynamic, Interactive Models to Teach Statistical Concepts.  
Michael T. Marsh, Shippensburg University of Pennsylvania (1023-J5-572)  

3:30PM  Graphical Methods for Teaching and Assessing the IID Assumption.  
Mark H Inlow, Rose-Hulman Institute of Technology (1023-J5-1784)  

John D McKenzie*, Babson College, and Robert N Goldman, Simmons College (1023-J5-1746)  

4:20PM  Graphing Data Badly, or Things I Swear my Statistics Teacher Never Told Me!  
Patricia B Humphrey, Georgia Southern University (1023-J5-1564)  

4:45PM  Examples of Misdisplaying Statistical Graphs in Presentations. Preliminary report.  
Jialing Dai, Dept. of Mathematics, University of the Pacific (1023-J5-1694)  

5:10PM  Graphs: Different Faces of Data.  
Madhuri S. Mulekar, University of South Alabama (1023-J5-1627)  

MAA Session on The Mathematics of Sudoku and Other Puzzles, II  

1:00 PM - 3:35 PM  
Organizer: Laura A. Taalman, James Madison University  

1:00PM  Some Observations on the Sudoku Puzzle. Preliminary report.  
Louis M. Beaugris, Kean University (1023-M1-1824)  

1:20PM  Proofs, Equivalence Classes and Groups Sudoku-Style.  
Cynthia J. Woodburn, Pittsburg State University (1023-M1-1460)  

W D Wallis, Southern Illinois University, Carbondale, IL (1023-M1-1905)  

2:00PM  Partial Latin Squares with the Sudoku Structure.  
Rommel G. Regis, Cornell University (1023-M1-1795)  

Rommel G. Regis, Cornell University (1023-M1-1795)  

2:40PM  Two methods for counting small sudoku puzzles.  
John Lorch*, Ball State University (1023-M1-1916)  

3:00PM  Beaucoup de Sudoku.  
W D Wallis, Southern Illinois University, Carbondale, IL (1023-M1-1905)  

Joyce Maxine Music* and Robin Blankenship, Morehead State University (1023-M1-1267)
MAA General Contributed Paper Session, VI

1:00 PM – 4:55 PM

Organizers: Eric S. Marland, Appalachian State University
Jay A. Malmstrom, Oklahoma State Community College

1:00PM  A new proof of a theorem on the closure ordering on nilpotent orbits of algebraic groups of Type A. Preliminary report.
  Joseph A Fox*, Salem State College, Terrell L Hodge, Western Michigan University, and Brian J Parshall, University of Virginia (1023-Z1-1286)

1:15PM  Ideals in Dorroh Extensions of Rings.
  Kent M. Neuerburg* and G. Alan Cannon, Southeastern Louisiana University (1023-Z1-214)

1:30PM  Primes and twin primes near some large numbers.
  Balakrishnan Varyiath Uckath, Eritrea Institute of Technology (1023-Z1-1586)

1:45PM  The Syllogism Needed to Negate the Definition of a Converging Sequence.
  Chokri Cherif* and Avraham Goldstein, BMCC-City University of New York (1023-Z1-587)

2:00PM  A Note on Weighted Idempotent and Logarithmic Means.
  Kendall C Richards and Hilari Celeste Tiedeman*, Southwestern University (1023-Z1-522)

2:15PM  Inversion Cosets in Music Theory.
  Craig M. Johnson, Marywood University (1023-Z1-58)

2:30PM  Developing a successful undergraduate colloquium course.
  Darren E Mason* and David A Reimann, Albion College (1023-Z1-1695)

2:45PM  Success Stories from a First Semester Seminar for Math Majors.
  Melvin G. Royer, Indiana Wesleyan University (1023-Z1-1171)

3:00PM  Redesigning the first course of differential equations. Preliminary report.
  Pangyen Ben Weng, Ramapo College of New Jersey (1023-Z1-1199)

3:15PM  Writing in the Vector Calculus class.
  Constantin Dorin Dumitrescu, University of Arizona, Tucson AZ (1023-Z1-1363)

3:30PM  Some Determinants of Student Performance in the Course of Introductory Statistics.
  Jen-Ting Wang*, SUNY-Oneonta, NY, and Shu-Yi Tu, University of Michigan – Flint (1023-Z1-1764)

3:45PM  Come on down! Learn about the probability of winning a car on The Price is Right!
  Joe A. Stickles, Jr., Millikin University (1023-Z1-1147)

4:00PM  Developmental Mathematics Program at the University of Maryland: 5 years of Success.
  Denny Gulick, MD (1023-Z1-974)

4:15PM  A team-teaching (Math and CS) approach to a Discrete Mathematics course.
  Rachelle C. DeCoste, United States Military Academy, West Point (1023-Z1-470)

4:30PM  Incorporating Software in College Algebra: Five Years Later.
  Michelle R DeDeo, Univ. of North Florida (1023-Z1-208)

4:45PM  A π-less Buffon’s Needle Problem.
  David Richeson, Dickinson College (1023-Z1-1121)

NAM Granville-Brown-Haynes Session of Presentations by Recent Doctoral Recipients in the Mathematical Sciences

1:00 PM – 3:35 PM

Organizer:  Dawn A. Lott, University of Maryland

1:00PM  Elements belonging to 2-element cocircuits in connected matroids.
  Joe Anderson*, Mississippi Valley State University, and Haidong Wu, University of Mississippi (1023-05-648)

1:20PM  Clones and Minors in Matroids.
  Carla D Cotwright, Wake Forest University (1023-05-690)

1:40PM  Finding Optimal Orbits on Chaotic Systems.
  Angela E Grant, Northwestern University (1023-37-647)

2:00PM  The Semiparametric Exchangeable Model.
  Stephine L Keeton*, U.S. Food and Drug Administration, and Hanxiang Peng, The University of Mississippi (1023-00-1606)

  Samuel Obara, Texas State University, San Marcos (1023-97-1179)

2:40PM  Large Circuit Pairs in Matroids.
  Bryan L Williams, Hampton University (1023-05-646)

3:00PM  Graph Groupoids and their topology.
  Adrian A Wilson, The University of Mississippi (1023-54-568)

3:20PM  Knots With Infinitely Many Incompressible Seifert Surfaces.
  Robin Todd Wilson, UC Santa Barbara (1023-57-504)

MAA Committee on the Undergraduate Program in Mathematics Panel Discussion

1:00 PM – 2:20 PM

The “bridge” course.
Organizer:  George R. Exner, Bucknell University
Moderator:  George R. Exner
Panelists:  David M. Bressoud, Macalester College
           Amy Cohen, Rutgers University
           Barbara E. Edwards, Oregon State University
           Annette M. Selden, New Mexico State University
           Stephen Harnish, Bluffton University

ASL Contributed Papers

2:00 PM – 4:50 PM

Organizer:  Marcia Groszek, Dartmouth College

2:00PM  On the failure of Craig interpolation in dynamic logics.
  Katalin Bimbó, Indiana University (1023-05-694)

2:25PM  Proof theory for admissible rules.
  George Metcalfe*, Vanderbilt University, and Rosalie Iemhoff, Utrecht University (1023-54-568)

2:50PM  Symmetric propositions and logical quantifiers.
  R. Gregory Taylor, Manhattan College (1023-05-646)

3:15PM  Hypersets with a universal set—two axiomatizations for Bi-AFA* set theories.
  Stephen Harnish, Bluffton University (1023-12-538)
3:40PM The notion of 1-consistency and Gödel polynomials.
(1365) Yvon Gauthier, University of Montreal
4:05PM On Computer robots recognizing their own geometric self-consistency.
(1366) Dan E Willard, SUNY Albany
4:30PM A note on the definition of a multisubset.
(1367) Dasharath Singh*, Ahmadu Bello University, and J.N. Singh, Barry University

RMMC Board of Directors
2:15 PM – 4:10 PM

MAA Presentations by Teaching Award Recipients
2:30 PM – 4:00 PM
(1368) My practice of mathematics.
Jennifer J. Quinn, Association for Women in Mathematics (1023-A0-1188)
(1369) Title to be announced.
Michael Starbird, University of Texas at Austin

AMS Committee on Science Policy Panel Discussion
2:30 PM – 4:00 PM
NSF funding for mathematics.
Organizer: De Witt L. Sumners, Florida State University
Panelists: Tony Chan, NSF
Peter March, NSF

MAA Panel Discussion
2:30 PM – 3:50 PM
Attracting underrepresented students to graduate study through research.
Organizers: William Hawkins, Jr, MAA and the University of the District of Columbia
Robert E. Megginson, University of Michigan, Ann Arbor
Panelists: Carlos Castillo-Chavez, Arizona State University
Dennis Davenport, Miami University of Ohio
Lloyd E. Douglas, National Science Foundation
Herbert A. Medina, Loyola Marymount University
Ivelisse M. Rubio, University of Puerto Rico
Michelle D. Wagner, National Security Agency
Robert E. Megginson

MAA Minicourse #3: Part B
3:30 PM – 5:30 PM
A tool to implement quantitative literacy (QL): Spreadsheets Across the Curriculum.
Organizers: Semra Kilic-Bahi, Colby-Sawyer College
Gary T. Franchy, Davenport University
Cheryl Coolidge, Colby-Sawyer College
William A. Thomas, Colby-Sawyer College

MAA Minicourse #9: Part B
3:30 PM – 5:30 PM
Evaluating student presentations in mathematics.
Organizers: Suzanne Dorée, Augsburg College
Richard J. Jardine, Keene State College
Thomas J. Linton, Central College

MAA Undergraduate Poster Session
3:30 PM – 5:30 PM
Organizer: Diana M. Thomas, Montclair State University

MAA Session on Integrating Mathematics and Biology in Undergraduate Education, II
4:15 PM – 6:10 PM
Organizers: Glenn W. Ledder, University of Nebraska-Lincoln
Yajun Yang, Farmingdale State University of New York
Jack Bookman, Duke University
James P. Fulton, Suffolk County Community College

Balancing Selection and The Evolution of Color Variation in Pacific Treefrogs (Hyla regilla) - An Interactive Lively Activity Project (ILAP).
Timothy F Englund* and R. Steven Wagner, Central Washington University (1023-K1-1758)

Using Tic-Tacs to Freshen up Carbon Dating. Preliminary report.
Shawnee McMurran, US Military Academy (1023-K1-1733)

Leslie Matrices: A Biological Application to Matrices and Difference Equations.
Robert E. Burks* and Joseph Lindquist, United States Military Academy (1023-K1-1713)

Discrete Logistic Model in Calculus II.
Talitha M Washington, University of Evansville (1023-K1-1713)

Biological Applications Across the Mathematics Curriculum at Appalachian State University.
Katrina M Palmer and Rene Salinas, Appalachian State University (1023-K1-1218)

Cross-education in mathematics and biology classrooms.
Elsa Schaefer, Marymount University (1023-K1-187)

AMS Mathematical Reviews Reception
6:00 PM – 7:00 PM
Monday, January 8

**MAA Minority Chairs Breakfast Meeting**
7:00 AM – 8:45 AM

**Joint Meetings Registration**
7:30 AM – 4:00 PM

**ASL Invited Address**
8:00 AM – 8:50 AM

(1377) Countable group actions and hyperfinite equivalence relations.
Su Gao, University of North Texas (1023-03-409)

AMS-MAA-MER Special Session on Mathematics and Education Reform, I
8:00 AM – 10:55 AM

Organizers: William H. Barker, Bowdoin College
Dale R. Oliver, Humboldt State University
Bonnie S. Saunders, University of Illinois at Chicago
Michael Starbird, University of Texas, Austin

8:00AM Building a Community of Mathematicians, Teachers, and Educators.
Al Cuoco, Center for Mathematics Education, and
Glenn Stevens*, Boston University (1023-97-665)

8:30AM Creating Math Learning Communities Locally and using ITV.
Max Warshauer*, Hiroko Warshauer, Alex White,
Terry McCabe and Alejandra Sorto, Texas State University (1023-97-395)

9:00AM Connecting Teacher Learning to Classroom Practice: The Story of a Large-scale Professional Community.
Tom Evitts* and Kate McGivney, Shippensburg University (1023-97-625)

9:30AM Building and Sustaining Communities of Mathematicians and Teachers.
Joan Ferrini-Mundy, Michigan State University (1023-97-1641)

10:00AM A Teacher’s Perspective on Communities of Mathematicians and Teachers.
Benjamin J. Sinwell, Montgomery County Public Schools and Park City Mathematics Institute (1023-97-1214)

10:30AM A Project-Based Re-Engineering of Business Calculus
Bruce Pollack-Johnson, Villanova University (1023-00-871)

**AMS-MAA Special Session on History of Mathematics, III**
8:00 AM – 10:55 AM

Organizers: Joseph W. Dauben, Lehman College
Patti Hunter, Westmont College
Victor J. Katz, University of the District of Columbia
Karen H. Parshall, University of Virginia

8:00AM Proof (without Words) in 17th-18th Century China.
Jiang-Ping Jeff Chen, St. Cloud State University (1023-01-335)

8:30AM Cramer’s Paradox from Euler to Bézout.
Robert E. Bradley, Adelphi University (1023-01-694)

9:00AM Publishing Mathematics in 18th-Century France.
Preliminary report.
Robin E. Rider, University of Wisconsin-Madison (1023-01-801)

Eisso J Atzema, University of Maine (1023-01-262)

10:00AM Geometric constructions and algebra: Wanzel’s impossibility proof. Preliminary report.
John McCleary, Vassar College (1023-01-762)

10:30AM A Delicate Collaboration: A. Adrian Albert and Helmut Hasse and the Principal Theorem in Division Algebras in the Early 1930’s.
Della D. Fenster*, University of Richmond, and Joachim Schwermer, University of Vienna (1023-01-922)

**AMS Special Session on Group Representations, Ergodic Theory, and Mathematical Physics: Honoring the Memory of George W. Mackey, Ill**
8:00 AM – 10:55 AM

Organizers: Robert S. Doran, Texas Christian University
Calvin C. Moore, University of California Berkeley
Robert J. Zimmer, The University of Chicago

8:00AM Recent Applications of Induced Representations.
Roger Howe, Yale University (1023-22-62)

9:00AM Broken symmetry.
Palle E. T. Jorgensen, University of Iowa (1023-47-29)

9:30AM Complex methods in harmonic analysis on symmetric spaces.
Gestur Olafsson, Louisiana State University (1023-22-981)
### AMS Special Session on Mapping Class Groups and Handlebodies, I

**8:00 AM – 10:55 AM**

Organizers: Tara E. Brendle, Louisiana State University  
William R. Vautaw, Southeastern Louisiana University

- **8:00 AM**  
  - **Injective Simplicial Maps of the Arc Complex.**  
  - Elmas Irmak, Bowling Green State University, and John D. McCarthy*, Michigan State University (1023-57-1146)

- **8:30 AM**  
  - **Automorphisms of the disk complex.**  
  - Saul Schleimer, Rutgers - New Brunswick (1023-57-997)

- **9:00 AM**  
  - **Infinite Presentations of the Torelli Group.**  
  - Andrew Putman, University of Chicago (1023-57-1303)

- **9:30 AM**  
  - **Comparing bridge surfaces.**  
  - Martin Scharlemann, University of California, Santa Barbara, and Maggy Tomova*, University of Iowa (1023-57-1388)

- **10:00 AM**  
  - **Dimension of Torelli groups.**  
  - Mladen Bestvina, University of Utah, Kai-Uwe Bux, University of Virginia, and Dan Margalit*, University of Utah (1023-20-533)

- **10:30 AM**  
  - **Applications of the disk complex of the genus-2 handlebody to knot theory.**  
  - Sangbum Cho and Darryl McCullough*, University of Oklahoma (1023-57-301)

### AMS Special Session on Recent Advances in Mathematical Biology, Ecology, and Epidemiology, I

**8:00 AM – 10:55 AM**

Organizers: Lih-ing Roeger, Texas Tech University  
Linda J. Allen, Texas Tech University  
Sophia Jang, University of Louisiana at Lafayette

- **8:00 AM**  
  - **Numerical integration of population models satisfying conservation laws:**  
  - NSFD methods.  
  - Ronald E Mickens, Clark Atlanta University (1023-92-329)

- **8:30 AM**  
  - **Multiple Attractors and Their Basins of Attraction in a Periodically Forced Discrete-time SIS Epidemic Model.**  
  - John E Franke*, North Carolina State University, and Abdul-Aziz Yakubu, Howard University (1023-92-941)

- **8:00 AM**  
  - **Transfer of unitary representations.**  
  - Yi Ni, University of California at San Diego, and Chen-Bo Zhu*, National University of Singapore (1023-22-1350)

- **8:30 AM**  
  - **Construction of new symplectic cohomology S^2 \times S^2.**  
  - S. Jabuka, University of Virginia (1023-57-1205)

- **9:00 AM**  
  - **A combinatorial description to some Heegaard Floer homologies.**  
  - Jiajun Wang, UC Berkeley & Columbia Univ (1023-51-178)

- **10:00 AM**  
  - **Knot Floer homology detects fibred knots.**  
  - Yi Ni, Princeton University (1023-57-425)

- **10:30 AM**  
  - **The SL(3) Casson invariant and spliced sums.**  
  - Thomas Mark, University of Virginia (1023-57-1205)

### AMS Special Session on Representation Theory and the Theta Correspondence, I

**8:00 AM – 10:55 AM**

Organizers: Scott J. Baldridge, Louisiana State University  
Ronald A. Fintushel, Michigan State University  
Thomas E. Mark, Southeastern Louisiana University  
Brendan E. Owens, Louisiana State University

- **8:00 AM**  
  - **Singular Relative Gromov-Witten Invariants.**  
  - Joshua R. Davis, Duke University (1023-53-1322)

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Organizers: Lih-ing Roeger, Texas Tech University  
Linda J. Allen, Texas Tech University  
Sophia Jang, University of Louisiana at Lafayette

- **8:00 AM**  
  - **Multiple attractors and non-equilibrium competitive coexistence.**  
  - J. M. Cushing*, University of Arizona, Shandelle M. Henson, Andrews University, Lih-ing Roeger, Texas Tech University, and Chantel C. Blackburn, University of Arizona (1023-92-908)

- **8:30 AM**  
  - **Difference Approximation for Measure-Valued Solutions to a Hierarchically Size-Structured Population Model.**  
  - Azmy S Ackleh*, University of Louisiana at Lafayette, and Kazufumi Ito, North Carolina State University (1023-92-772)

- **9:00 AM**  
  - **On a nonlocal reaction-diffusion population model.**  
  - Keng Deng, University of Louisiana at Lafayette (1023-35-792)

- **9:30 AM**  
  - **Attractors in nonautonomous systems and Applications to population models.**  
  - Saber N Elaydi, Trinity University (1023-39-1704)
AMS Special Session on Structure Theory for Matroids and Graphs, I

8:00 AM – 10:55 AM

Organizers: Joseph P. Kung, University of North Texas
Bogdan S. Oporowski, Louisiana State University
James G. Oxley, Louisiana State University

8:00 AM

Distinguishability of Locally Finite Trees.
Xiangqian Zhou*, the University of Mississippi, and Mark Watkins, Syracuse University (1023-05-687)

8:30 AM

Stabilizers for matroids over finite fields.
Sandra Kingan, Clayton State University (1023-05-1090)

9:00 AM

Coloring graphs on surfaces with all faces even.
Daniel Král, Charles University, Czech Republic, and Robin Thomas*, Georgia Institute of Technology (1023-05-1125)

10:00 AM

Negative correlations for spanning forests of graphs.
David G. Wagner, University of Waterloo (1023-05-327)

10:30 AM

Unavoidable Minors in Graphs. Preliminary report.
Caroly  

AMS Special Session on Time Scales: Dynamic Equations with Applications, I

8:00 AM – 10:55 AM

Organizers: Martin J. Bohner, University of Missouri-Rolla
Allan C. Peterson, University of Nebraska-Lincoln

8:00 AM

Lynn H Erbe* and Allan C Peterson, University of Nebraska, Lincoln, Nebraska (1023-39-888)

8:30 AM

Fractional q-calculus on a time scale.
Ferhan M Atici, Western Kentucky University, and Paul W Eloe*, University of Dayton (1023-39-441)

9:00 AM

A generalized upper and lower solution method for singular boundary value problems for the one-dimensional p-Laplacian on time scales. Preliminary report.
Elvan Akin-Bobe, University of Missouri-Rolla, and Ravi Agarwal, Florida Institute of Technology (1023-34-1234)

9:30 AM

Solvability of some nonlinear boundary value problems.
Christopher C. Tisdell, The University of New South Wales (1023-34-433)

10:00 AM

Convergence of Solutions of Dynamic Equations on Time Scales.
Bonita A. Lawrence and Ralph W. Oberste-Vorth*, Marshall University (1023-34-1298)

10:30 AM

Qin Sheng, Baylor University (1023-39-979)
AMS Special Session on Commutative Algebra and Algebraic Geometry, I

8:00 AM – 10:55 AM

Organizers: Paul C. Roberts, University of Utah
Anurag K. Singh, University of Utah
Oana Veliche, University of Utah

8:00AM (1441) The Newton Polytope of the Implicit Equation.
Bernd Sturmfels, UC Berkeley, Jenia Tevelev, University of Massachusetts, Amherst, and Josephine Yu*, UC Berkeley (1023-14-285)

8:30AM (1442) Resultant formula for the A– discriminant and dual defect toric varieties.
Raymond P Curran, Metropolitan State College of Denver (1023-14-1697)

9:00AM Generalized Green’s Theorem.
Irena Peeva*, Cornell Univ., and Jeff Mermin, Univ. of Kansas (1023-13-302)

9:30AM Resolutions of square-free monomial ideals.
Tai Huy Ha, Tulane University (1023-13-1144)

10:00AM The homogeneous coordinate rings of some Del Pezzo surfaces.
Mike Stillman, Damiano Testa and Mauricio Velasco*, Cornell University (1023-13-1020)

10:30AM Relative and Tate Cohomology for modules of finite $G_C$-dimension.
Diana M White*, University of Nebraska, and Ryo Takahashi, Meiji University (1023-13-957)

AMS Session on Probability and Statistics, I

8:00 AM – 10:55 AM

8:00AM Convergence in Distribution of Random Compact Sets in Polish Spaces.
Hussain Elalaoui-Talibi*, Tuskegee University, and Lisa D. Peterson, Auburn University (1023-60-1285)

8:15AM On the compact support property of solutions of hyperbolic SPDE.
Hassan Allouba and Oleksiy Iagnatiev*, Kent State University (1023-60-1319)

8:30AM A New Look at Stopping Times Related to Trading Techniques.
Vilen Abramov* and Kazim M Khan, Kent State University (1023-60-1328)

8:45AM On the Replicator Dynamics behavior under Stratonovich type random perturbations.
R. Khasminskii and N. Potsepan*, Wayne State University (1023-60-1394)

9:00AM Using the pmf of the time to reach a subset of states in an irreducible finite Markov chain for clustering. Preliminary report.
Maxim J. Goldberg*, Ramapo College of NJ, and Seonja Kim, Fairleigh Dickinson University (1023-60-1400)

9:15AM From Random Matrices to Stochastic Operators.
Brian D. Sutton*, Randolph-Macon College, and Alan Edelman, Massachusetts Institute of Technology (1023-60-149)

George A Khachatryan, University of Chicago (1023-60-1568)

AMS Session on Numerical Analysis and Computer Science, I

8:00 AM – 10:55 AM

8:00AM A W-Cycle Multigrid Algorithm for a New NIPG Method.
Susanne C Brenner, Louisiana State University and the University of South Carolina, and Luke N Owens*, University of South Carolina (1023-65-1049)

8:15AM Binomial tau-leap Spatial Stochastic Simulation Algorithm.
Tatiana T Marquez-Lago* and Kevin Burrage, Advanced Computational Modelling Centre, University of Queensland (1023-65-1066)

8:30AM Is symplectic-energy-momentum integration well-posed?
Yosi Shibberu, Rose-Hulman Institute of Technology (1023-65-1367)

8:45AM Electromagnetic-Thermal Model of Microwave Processing. Preliminary report.
Jim M Kiley* and Dena Feldman, WI Center for Industrial Mathematics and Statistics (1023-65-1513)

9:00AM solving polynomial systems by parallel polyhedral homotopies.
Jan Verschelde, University of Illinois at Chicago, and Yan Zhuang*, UIUC (1023-65-1520)

Jennifer Zhao*, University of Michigan-Dearborn, Weizhong Dai and Suyang Zhang, Louisiana Tech. University (1023-65-1541)

9:30AM Restarted Nonsymmetric Lanczos and Two-Sided Arnoldi. Preliminary report.
Dywayne A Nicely, Baylor University (1023-65-1603)

9:45AM The quality of approximation bases for the Helmholtz equation. Preliminary report.
Timo Betcke, TU Braunschweig (1023-65-166)

10:00AM Mathematical Modeling of Elastic Snap Through. Preliminary report.
Mark S. Kortle, Montclair State University (1023-65-1669)
Monday, January 8 – Program of the Sessions

MAA Session on Applications of Discrete Mathematics, I

8:00 AM – 10:55 AM
Organizers: Thomas Koshy, Framingham State College
            Thomas Moore, Bridgewater State College

- 8:00 AM
  Community Structure in the United States Congress.
  Mason A Porter, California Institute of Technology
  (1023-D1-48)

- 8:20 AM
  Computer Science, Strong Induction and Pile-Splitting.
  Bill Marion, Valparaiso University (1023-D1-52)

- 8:40 AM
  Matching Columns in a Cyclically Repeated Pattern of 3 Colors.
  Ashish K. Srivastava* and Steve Szabo, Ohio University
  (1023-D1-98)

- 9:00 AM
  Network Flow Problems with Path Capacities.
  Preliminary report.
  Maren Martens* and Martin Skutella, Dortmund University
  (1023-D1-128)

- 9:20 AM
  A Real-World Scheduling Problem in the Undergraduate Algorithms Course.
  Preliminary report.
  Yana Kortsarts, Widener University, Computer Science Department
  (1023-D1-172)

- 9:40 AM
  Discrete Approximation to a Steady-State Temperature Distribution.
  Jenny Switkes*, Gordon Safely* and Anh Tran, Cal Poly Pomona
  (1023-D1-353)

- 10:00 AM
  Integrating Programming into Discrete Mathematics.
  Preliminary report.
  Keith E Howard, Mercer University (1023-D1-439)

- 10:20 AM
  Jacobsthal Compositions.
  Ralph P. Grimaldi, Rose-Hulman Institute of Technology
  (1023-D1-488)

- 10:40 AM
  The Spectral Radius of Submatrices of Laplacian Matrices for Graphs.
  Preliminary report.
  Jason J Molierno, Sacred Heart University
  (1023-D1-561)

MAA Session on Assessment of Undergraduate Mathematics, I

8:00 AM – 10:55 AM
Organizers: William Martin, North Dakota State University
            Bernard L. Madison, University of Arkansas

- 8:00 AM
  Assessing Student Attitudes On the Value of
  Milo Schield, Augsburg College (1023-D5-76)

- 8:15 AM
  Assessment as a Vehicle for Change.
  Jill Shahverdian, Quinnipiac University
  (1023-D5-1361)

- 8:30 AM
  Building an Assessment Program for a Liberal Arts Math Major from Scratch.
  Sarah Hutcheson Jahn and Robert J. Krueger*, Concordia University, St. Paul
  (1023-D5-592)

- 8:45 AM
  Programmatic Assessment of Proof Writing.
  Preliminary report.
  Karen Batt Stanish, Keene State College
  (1023-D5-1686)

- 9:00 AM
  Implementing Assessment Plans for Programs in
  Mathematics and Computer Science: What We Have Learned through Two Cycles.
  Ken Luther* and Bill Marion, Valparaiso University
  (1023-D5-51)

- 9:15 AM
  The Calculus Concept Inventory, Validation and Analysis of Results Correlated with Teaching Methodology.
  Jerome S. Epstein, Polytechnic University
  (1023-D5-394)

- 9:30 AM
  A Case Study of Assessment of the Academic Major and the Quantitative Reasoning Component of the Liberal Learning Curriculum at The College of New Jersey and Its Possible Application Elsewhere.
  Preliminary report.
  Edward J. Conjura* and Cathy Liebars, The College of New Jersey
  (1023-D5-701)

- 9:45 AM
  The Mathematics Core: A Question of Fairness.
  Barbara M Moskal*, Scott Strong and Graeme Fairweather, Colorado School of Mines
  (1023-D5-717)

- 10:00 AM
  Assessment of the Major Made Simple.
  Pamela B. Pierce* and James L. Hartman, The College of Wooster
  (1023-D5-1519)

- 10:15 AM
  Teaching to the Test (or how I stopped worrying and learned to love the Major Field Achievement Test.).
  William P Abrams* and Jeffery Peden, Longwood University
  (1023-D5-354)

- 10:30 AM
  Undergraduate Assessment in Mathematics at a Four-Year Comprehensive University. Preliminary report.
  Kevin E. Charlwood, Washburn University
  (1023-D5-415)

- 10:45 AM
  A Follow-up on Using Portfolios in Mathematics
  Education Programs to Assess Content and Connect to Future Practice.
  Janet A. White* and Dorothee J. Blum, Millersville University
  (1023-D5-427)

MAA Session on College Algebra: Concepts, Data, and Models, II

8:00 AM – 10:55 AM
Organizers: Florence S. Gordon, New York Institute of Technology
            Mary Robinson, University of New Mexico Valencia Campus
            Norma Agras, Miami Dade Community College
            Laurette Foster, Prairie View A&M University
<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00AM</td>
<td>Integrating Applications, Modeling, and Technology in a College Algebra Course.</td>
<td>Ronald J. Harshbarger*, University of South Carolina Beaufort, and Lisa Y.occo, Georgia Southern University (1023-F1-497)</td>
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<tr>
<td>8:15AM</td>
<td>Search for Meaning in a College Algebra Course.</td>
<td>Preliminary report.</td>
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<tr>
<td>8:30AM</td>
<td>Designing, Teaching, and Researching Contemporary Based College Algebra Courses.</td>
<td>Erick Brian Hofacker, University of Wisconsin- River Falls (1023-F1-1855)</td>
</tr>
<tr>
<td>8:45AM</td>
<td>Data Exploration and Modeling in a College Algebra Course: Use of Heart Rate Data to Investigate Recovery Time of Athletes.</td>
<td>Erica Slate Young, United States Military Academy at West Point (1023-F1-1718)</td>
</tr>
<tr>
<td>9:00AM</td>
<td>Beginning with a 21st Century View: Mathematical Modeling and Problem Solving Courses with Interdisciplinary Applications in College Algebra.</td>
<td>William P. Fox, Naval Postgraduate School (1023-F1-624)</td>
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<tr>
<td>9:15AM</td>
<td>College Algebra across the City.</td>
<td>Elizabeth Jane Kreston, University of the Incarnate Word (1023-F1-388)</td>
</tr>
<tr>
<td>9:30AM</td>
<td>An Excel-lent Approach to College Algebra.</td>
<td>Eric Gaze, Alfred University (1023-F1-754)</td>
</tr>
<tr>
<td>9:45AM</td>
<td>Mathematics, Geography, and Data: Introducing Geographic Concepts in Mathematics Classes.</td>
<td>Robert J. Hickey* and Stuart Boersma, Central Washington University (1023-F1-1271)</td>
</tr>
<tr>
<td>10:00AM</td>
<td>Understanding Algebra while Learning Calculus: A successful integrated course.</td>
<td>Alicia Sevilla* and Kay Somers, Moravian College (1023-F1-688)</td>
</tr>
<tr>
<td>10:15AM</td>
<td>Steroids, Alcohol and Birth Control: Precalculus Investigations of Current Health Issues.</td>
<td>Theresa Laurent, St. Louis College of Pharmacy (1023-F1-896)</td>
</tr>
<tr>
<td>10:30AM</td>
<td>The Optimal Origami Box.</td>
<td>Shelly Smith, Grand Valley State University (1023-F1-589)</td>
</tr>
</tbody>
</table>

**MAA General Contributed Paper Session, VII**

Organizers: Eric S. Marland, Appalachian State University
            Jay A. Malmstrom, Oklahoma State Community College
            Raymond J. McGivney-Burelle*, Southern Oregon University, and Raymond J. McGivney, University of Hartford (1023-Z1-1184) &

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speakers</th>
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</thead>
<tbody>
<tr>
<td>8:00AM</td>
<td>Perfect Matchings in Pruned Grid Graphs.</td>
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<tr>
<td>8:05AM</td>
<td>Disjunctive Rado Numbers for a pair of Schur Like Equations.</td>
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<tr>
<td>8:30AM</td>
<td>Cantor’s Set and the Continuum Hypothesis.</td>
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<tr>
<td>8:45AM</td>
<td>Computational Exercises on Carmichael Numbers and Pollard Rho Factorization.</td>
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<tr>
<td>9:00AM</td>
<td>An Explicit Plancherel Formula for Certain Completely Solvable Homogeneous Spaces.</td>
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<tr>
<td>9:15AM</td>
<td>Natural Parameterizations of a Region.</td>
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<tr>
<td>9:30AM</td>
<td>An Introduction to Product Calculus.</td>
<td></td>
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<tr>
<td>9:45AM</td>
<td>When Is The Derivative OF A Composition The Composition Of The Derivatives? Preliminary report.</td>
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</tr>
<tr>
<td>10:00AM</td>
<td>Using mnemonic and Ausubelian concept mapping to teach “and/or” probability problems.</td>
<td></td>
</tr>
<tr>
<td>10:15AM</td>
<td>Whad’Ya Know?: Classroom Voting in a Liberal Arts Mathematics Course. Preliminary report.</td>
<td></td>
</tr>
<tr>
<td>10:45AM</td>
<td>Teaching Optimization at a Liberal Arts College to Math and CS Majors.</td>
<td></td>
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</tbody>
</table>

**AMS Session on Operator Theory and Optimal Control, I**

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:15AM</td>
<td>On The Commutator Ideal of the Toeplitz Algebra on the Bergman Space of the Unit Ball in C^n.</td>
<td>Trieu Le, University at Buffalo (1023-47-114)</td>
</tr>
<tr>
<td>8:30AM</td>
<td>Composition operators on Banach spaces of analytic functions of the unit ball.</td>
<td>Matthew A. Pons, University of Virginia (1023-47-1185)</td>
</tr>
<tr>
<td>8:45AM</td>
<td>Determining the Membership of Hankel Operators in the Symmetrically-Normed Ideals of the Segal-Bargmann Space. Preliminary report.</td>
<td>D K Farnsworth, University at Buffalo (1023-47-1194)</td>
</tr>
<tr>
<td>9:00AM</td>
<td>Compact quantum group actions on $C^*$-algebras.</td>
<td>Raluca Dumitru, University of Cincinnati (1023-47-1397)</td>
</tr>
</tbody>
</table>
| 9:15AM | Invariant subspaces of parabolic non-automorphisms in the Hardy space. Preliminary report. | Alfonso Montes-Rodriguez, Manuel Ponce-Escudero* and Stanislav A. Shkarin, Universidad de Sevilla (1023-47-1434) &
| 9:45AM | Operator Means and its application in solving a class of operator equation.              | Mohammad Khadivi, Jackson State University (1023-47-1675)                                   |
Monday, January 8 – Program of the Sessions

AMS on Combinatorics, III

8:15 AM – 10:40 AM

8:15 AM  On the expected height of t-ary trees under random edge compression. Preliminary report.
Joshua Zahi, California Institute of Technology (1023-05-424)

8:20 AM  Splitter Theorems for 4-regular Planar Graphs.
Guoli Ding, Louisiana State University, and Jinko Kanno*, Louisiana Tech University (1023-05-431)

8:45 AM  Break.

9:00 AM  Muti-restrained Stirling numbers. Preliminary report.
Ji Young Choi, Shippensburg University of PA (1023-05-478)

9:15 AM  An Analysis of Random Words of Fixed Length.
Gerald Y. Agbegha, Johnon C. Smith University (1023-05-571)

AMS Committee on Education Panel Discussion

8:30 AM – 10:00 AM

A panel on the National Math Panel.
Organizer: William G. McCallum, University of Arizona
Presenters: Francis Fennell, National Council of Teachers of Mathematics
Larry R. Faulkner, University of Texas at Austin

MAA Session on Integrating Mathematics and Biology in Undergraduate Education, III

8:40 AM – 10:35 AM

8:40 AM  Biology Content in Calculus Labs. Preliminary report.
Joseph F. Kolacinski*, Elmira College, and John E. Beam, University of Wisconsin Oshkosh (1023-K1-1826)

9:00 AM  Bringing Life to Biocalculus: Lab Projects and Seminar Series.
Brigitte Tenhumberg, University of Nebraska-Lincoln, and Glenn Ledder, Farmingdale State College (1023-K1-272)

Laurie J Heyer* and A. Malcolm Campbell, Davidson College (1023-K1-617)

9:40 AM  An “Experimental” Interdisciplinary Course in Mathematical Ecology.
Glenn Ledder*, University of Nebraska-Lincoln, and Brigitte Tenhumberg, School of Biological Sciences, University of Nebraska-Lincoln (1023-K1-272)

10:00 AM  Symbiosis: Integrating Mathematics and Statistics with an Introductory Biology Sequence.
Jeff R. Kinsley*, East Tennessee State University, and Istvan Karsai, Dept. of Biological Sciences, East Tennessee State University (1023-K1-1462)

10:20 AM  Integrating Mathematics into the Introductory Biology Laboratory Course.
James D White* and Jenna P Carpenter, Louisiana Tech University (1023-K1-899)

AMS Invited Address

9:00 AM – 9:50 AM

New combinatorics from the invariant theory of reflection groups.
Victor S. Reiner, School of Mathematics, University of Minnesota (1023-05-09)
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 AM – 9:50 AM</td>
<td><strong>ASL Invited Address</strong></td>
<td>Recent Uses of Proof Theory in Nonlinear Analysis and Geodesic Geometry. Ulrich Kohlenbach, Darmstadt University of Technology (1023-03-411)</td>
</tr>
<tr>
<td>9:00 AM – 11:00 AM</td>
<td><strong>MAA Minicourse #10: Part B</strong></td>
<td>A beginner's guide to the scholarship of teaching and learning in mathematics. Organizers: Curtis D. Bennett, Loyola Marymount University Jacqueline M. Dewar, Loyola Marymount University</td>
</tr>
<tr>
<td>9:00 AM – 11:00 AM</td>
<td><strong>MAA Minicourse #16: Part B</strong></td>
<td>More music and mathematics. Organizer: Leon Harkleroad, Wilton, ME</td>
</tr>
<tr>
<td>9:00 AM – 11:00 AM</td>
<td><strong>MAA Minicourse #4: Part B</strong></td>
<td>Creating visual mathematics applets using flash programming. Organizers: Douglas E. Ensley, Shippensburg University Barbara Kaskosz, University of Rhode Island</td>
</tr>
<tr>
<td>9:00 AM – 10:20 AM</td>
<td><strong>MAA Panel Discussion</strong></td>
<td>Teaching and learning mathematics in a Computer Algebra Systems (CAS) enriched environment: College algebra to real analysis. Organizer: Wade Ellis, Jr., West Valley College Panelists: William C. Bauldry, Appalachian State University</td>
</tr>
<tr>
<td>9:00 AM – 9:50 AM</td>
<td><strong>MAA Special Report</strong></td>
<td>Algebra: Gateway to a technological future. Organizer: Michael Pearson, MAA</td>
</tr>
<tr>
<td>9:00 AM – 1:00 PM</td>
<td><strong>Exhibits and Book Sales</strong></td>
<td>HBCUs prepare to reform college algebra courses. Organizer: Dennis Davenport, U. S. Military Academy</td>
</tr>
<tr>
<td>10:00 AM – 10:50 AM</td>
<td><strong>NAM Business Meeting</strong></td>
<td></td>
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<tr>
<td>10:05 AM – 10:55 AM</td>
<td><strong>MAA Invited Address</strong></td>
<td>Back and forth through computable model theory. Valentina S. Harizanov, George Washington University (1023-03-410)</td>
</tr>
<tr>
<td>10:00 AM – 10:50 AM</td>
<td><strong>NAM Panel Discussion</strong></td>
<td>HBCUs prepare to reform college algebra courses. Organizer: Dennis Davenport, U. S. Military Academy</td>
</tr>
<tr>
<td>10:30 AM – 11:00 AM</td>
<td><strong>AQM Workshop: Poster Session with Presentations from Women Recent Ph.D.s and Graduate Students</strong></td>
<td>High Order Fully Coupled Discontinuous Finite Element Methods For Two-Phase Flow. Yekaterina Epshetye and Beatrice Riviere, University of Pittsburgh (1023-65-765)</td>
</tr>
</tbody>
</table>
10:30 AM  Spectral averaging in von Neumann algebras.  
Vadim Kostyrykin, Technische Universität Clausthal,  
Konstantin A. Makarov and Anna Skripka*, University of Missouri-Columbia (1023-47-800)  
Paula A. Vasquez* and L. Pamela Cook, University of Delaware (1023-76-802)  
Jennifer M. Franko, Indiana University, Bloomington (1023-54-842)  
10:30 AM  Large scale Bayesian parameter estimation and sensitivity analysis for the cardiac metabolism during ischemia.  
Rachael S Hageman*, Case Western Reserve University, Center for Modeling Integrated Metabolic Systems, Erkki Somersalo, Helsinki University of Technology, and Daniela Calvetti, Case Western Reserve University, Center for Modeling Integrated Metabolic Systems (1023-92-950)  
10:30 AM  Transmission Boundary Value Problems in Non-Smooth Domains.  
Katharine Ott* and Irina Mitrea, University of Virginia (1023-35-1025)  
10:30 AM  Visibility of Point Clouds and Mapping of Unknown Environments.  
Yanina Landa, University of California Los Angeles (1023-49-1069)  
10:30 AM  Semilinear Actions of Galois Groups and Descent in Algebraic K-Theory.  
G K Lyo, University of California, Berkeley (1023-55-1076)  
10:30 AM  Topological Properties of a DNA Computing Model.  
Daniela Genova, University of South Florida, Tampa, Florida (1023-68-1128)  
10:30 AM  Universal abelian covers of normal surface singularities of the form \( \{ z^n = f(x, y) \} \).  
Elizabeth A. Sell, University of North Carolina at Chapel Hill (1023-14-1374)  
Akram Aldroubi and Fumiko Futamura*, Vanderbilt University (1023-42-1508)  
10:30 AM  “Ramanujan’s very interesting functions”: mock theta functions and vector-valued Maass-Poincare series.  
Sharon Anne Garthwaite, University of Wisconsin-Madison (1023-11-1540)  

MAA Business Meeting  
11:10 AM - 11:40 AM  
Organizer: Martha J. Siegel, Towson University  
Moderator: Carl C. Cowen, IUPUI  

AMS Business Meeting  
11:45 AM - 12:15 PM  

NAM Claytor-Woodard Lecture  
1:00 PM - 1:50 PM  
(1564) Some mathematical models for modeling blood flow in the kidney.  
Nathaniel Whitaker, University of Massachusetts, Amherst (1023-76-416)  

ASL Invited Address  
1:00 PM - 1:50 PM  
(1565) Classifying Measure Preserving Transformations.  
Matthew D. Foreman, University of California Irvine (1023-03-407)  

AMS-MAA-MER Special Session on Mathematics and Education Reform, II  
1:00 PM - 5:55 PM  
Organizers: William H. Barker, Bowdoin College  
Dale R. Oliver, Humboldt State University  
Bonnie S. Saunders, University of Illinois at Chicago  
Michael Starbird, University of Texas, Austin  

Monday, January 8  

The Institute for Mathematics and Education at the University of Arizona. Preliminary report.  
William McCallum, University of Arizona (1023-97-1687)  

A National Conference on Doctoral Programs in Mathematics Education: What issues should be addressed? Preliminary report.  
Robert Reys, University of Missouri (1023-97-544)  

Enhancing the Teaching of Euclidean Geometry.  
Charlene E. Beckmann, Grand Valley State University (1023-97-1501)  

Mathematicians and Teachers: From Summer Institutes to the School Year.  
James R King, University of Washington (1023-97-1322)  

Report on Calculus at Macalester College.  
Preliminary report.  
David M Bressoud, Macalester College (1023-97-777)  

Preparing Prospective Teachers to Teach AP Calculus. Preliminary report.  
Scott Baldridge, Louisiana State University (1023-97-355)  

Teaching Calculus with Future Middle School Teachers.  
Preliminary report.  
Bonnie S Saunders, University of Illinois at Chicago (1023-97-1608)  

What is the effect of implementing a content/methods Calculus I course into a university science and mathematics secondary teacher preparation program? Preliminary report.  
Mark L. Daniels, University of Texas (1023-97-11)  

An Interactive Online Calculus Text.  
David A. Smith* and Lawrence C. Moore, Duke University (1023-97-1653)  

Calculus for the Public.  
Michael Starbird, University of Texas at Austin (1023-97-833)  

AMS-MAA Special Session on History of Mathematics, IV  
1:00 PM - 5:55 PM  
Organizers: Joseph W. Dauben, Lehman College  
Patti Hunter, Westmont College  
Victor J. Katz, University of the District of Columbia  
Karen H. Parshall, University of Virginia
AMS Special Session on Mapping Class Groups and Handlebodies, II

1:00 PM – 5:55 PM

Organizers: Tara E. Brendle, Louisiana State University
William R. Vautaw, Southeastern Louisiana University

1:00 PM
Straightening tube sums.
(1590) Martin Scharlemann, U. C. Santa Barbara (1023-57-670)

1:30 PM
Mapping class groups of Heegaard splittings.
(1591) Preliminary report.
Jesse E Johnson*, Yale University, and Hyam Rubinstein, University of Melbourne (1023-57-921)

2:00 PM
On some relations and homology of the Dehn twist quandle.
(1592) Joel Zablow, Rochester Institute of Technology, Rochester N.Y. (1023-57-553)

2:30 PM
Some homological properties on a handlebody group.
(1593) Susumu Hirose, Saga University (1023-57-811)

3:00 PM
Right-Valuing Diffeomorphisms of Bordered Surfaces and the Burau Representation of B3.
(1594) Emille K. Davie, University of Georgia (1023-57-1050)

3:30 PM
Heegaard splitting and 3-manifold invariants from the Johnson-Morita homomorphisms. Preliminary report.
Joan S. Birman, Columbia University, Tara E Brendle, Louisiana State University, and Nathan D. Broaddu*, University of Chicago (1023-57-1243)

4:00 PM
A Presentation For The Automorphisms Of The 3-Sphere That Preserve A Genus Two Heegaard Splitting. Preliminary report.
Erol Akbas, University of Arkansas (1023-57-1033)

4:30 PM
Surface homeomorphisms that do not extend to any handlebody, Preliminary report.
Jamie Bradley Jorgensen, Rice University (1023-57-1172)

5:00 PM
From handlebodies to closed 3-manifolds: a geometric approach.
(1595) Hossein Namazi, Princeton University (1023-57-945)

5:30 PM
Leonardo N. Carvalho*, Universidade Federal Fluminense - Brazil, and Ulrich Oertel, Rutgers University - Newark (1023-57-1212)
AMS Special Session on Recent Advances in Mathematical Biology, Ecology, and Epidemiology, II

1:00 PM – 5:55 PM

- **1:00PM**
  **Dynamics of a Discontinuous Discrete Model of West Nile-Like Epidemics.**
  Vjeklo L. Kocić, Xavier University of Louisiana (1023-39-365)

- **1:30PM**
  **Control of an Epidemic Model of Rabies in Raccoons.**
  Preliminary report.
  Suzanne Lenhart, University of Tennessee (1023-92-249)

- **2:00PM**
  **Dynamic Reduction, the Periodic Ricker Map and Genetically Altered Mosquitos.**
  Robert J. Sacker*, University of Southern California, and Hubertus F. von Bremen, California State Polytechnic University (1023-92-1255)

- **2:30PM**
  **Disease extinction and persistence in spatially heterogeneous host-parasite models with inter-patch travel.**
  Preliminary report.
  Thanate Dhirasatkadonan, Horst R. Thieme*, Arizona State University, and Pauline van den Driessche, University of Victoria (1023-92-1282)

- **3:00PM**
  **Modeling relapse in infectious diseases.**
  P. van den Driessche, Department of Mathematics and Statistics, University of Victoria (1023-92-593)

- **3:30PM**
  **Effect of the introduction of refractory vectors in a vector-borne disease.**
  Julien Arino, University of Manitoba (1023-92-1642)

- **4:00PM**
  **The Final Size of a SARS Epidemic Model Without Quarantine.**
  Preliminary report.
  Sze-Bi Hsu, National Tsing Hua University, and Lih-Ing W. Roeger*, Texas Tech University (1023-92-515)

- **4:30PM**
  **Comparative estimation of the reproduction number for pandemic influenza from daily case notification data.**
  Gerardo Chowell*, Los Alamos National Laboratory, Hiroshi Nishiura, Institut fuer Medizinische Biometrie, Universitaet Tuebingen, and Luis MA Bettencourt, Los Alamos National Laboratory (1023-92-816)

- **5:00PM**
  **Optimal Flooding and Native-Invasive Plant Quarantine.**
  Sophia R.-J. Jang, University of Louisiana at Lafayette (1023-92-1140)

AMS Special Session on Recent Developments in Floer Homology, II

1:00 PM – 5:55 PM

- **1:00PM**
  **Compactness for folded holomorphic maps.**
  Jens von Bergmann, University of Notre Dame (1023-58-1593)

- **1:30PM**
  **Computation of Floer Homology for certain Lagrangian Tori in closed 4-manifolds.**
  Adam C Knapp, Michigan State University (1023-53-1691)

- **2:00PM**
  **On knot Floer homology.**
  Peter S Ozsvath, Columbia University (1023-57-1129)

- **3:00PM**
  **Topological triviality of smoothly knotted surfaces in 4-manifolds.**
  Hee Jung Kim*, McMaster University, and Daniel Ruberman, Brandeis University (1023-57-636)

- **3:30PM**
  **Open Book Decompositions of Torus Bundles over $S^1$.**
  Jeremy Van Horn-Morris, University of Texas at Austin (1023-54-1555)

- **4:00PM**
  **Thurston-Bennequin bounds for knots in more general contact manifolds.**
  Preliminary report.
  Matthew E Hedden, Massachusetts Institute of Technology (1023-51-558)

- **4:30PM**
  **Heegaard Floer homology and Periodic Knots.**
  Preliminary report.
  Sridhar Rajagopal, Brandeis University (1023-55-1059)

- **5:00PM**
  **Generalizations of symplectic structures and Lefschetz fibrations on smooth 4-manifolds.**
  R Inanc Baykur, Michigan State University (1023-53-341)
AMS Special Session on Representation Theory and the Theta Correspondence, II

1:00 PM – 6:00 PM
Organizers: Wee Teck Gan, University of California San Diego
Hongyu He, Louisiana State University
Annegret Paul, Western Michigan University

1:00PM An approach to the local theta correspondence through invariants?
Roger Howe, Yale University (1023-22-307)

2:00PM Signatures of invariant Hermitian forms on irreducible highest weight modules and signed Kazhdan-Lusztig polynomials.
Wai Ling Yee, University of Windsor (1023-22-1525)

2:30PM Lifting of characters on p-adic orthogonal and metaplectic groups.
Tatiana K Howard, University of Maryland College Park (1023-22-436)

3:00PM Bernstein’s center for real groups.
Gordan Savin*, University of Zagreb (1023-22-464)

3:30PM On the global non-vanishing of theta lifts from even orthogonal groups.
Shuichiro Takeda, University of California, San Diego (1023-11-1289)

4:00PM Minimal polynomials and elementary divisors for simple highest weight modules. Preliminary report.
Victor Protsak, University of Oklahoma (1023-22-1432)

4:30PM Small principal series and representations of rank two.
Hadi Salmasian, Queen’s University, Kingston, Ontario, Canada (1023-22-1108)

5:00PM Topology of Siegel modular threefolds and theta lifting. Preliminary report.
Hongyu He and Jerome William Hoffman*, Louisiana State University (1023-14-692)

5:30PM Discussion.

AMS Special Session on Structure Theory for Matroids and Graphs, II

1:00 PM – 5:55 PM
Organizers: Joseph P. Kung, University of North Texas
Bogdan S. Oporowski, Louisiana State University
James G. Oxley, Louisiana State University

1:00PM Towards a structure theory for matroids.
Bert Gerards, Centrum voor Wiskunde en Informatica, Amsterdam & Technische Universität Eindhoven (1023-05-1266)

2:00PM Ore-Type and Dirac-Type Theorems for Matroids.
Sean McGuinness, Dartmouth College (1023-05-752)

2:30PM Transversal Lattices.

AMS Special Session on Time Scales: Dynamic Equations with Applications, II

1:00 PM – 5:55 PM
Organizers: Martin J. Bohner, University of Missouri-Rolla
Allan C. Peterson, University of Nebraska-Lincoln

1:00PM A Nonlinear Sturm-Picone Comparison Theorem for Dynamic Equations on Time Scales.
Boris Belinsky, John R Graef*, University of Tennessee at Chattanooga, and Sonja Petrovic, University of Kentucky (1023-39-1131)

1:30PM Asymptotic Behavior of Solutions for Neutral Dynamic Equations on Time Scales.
Douglas Anderson, Concordia College–Moorhead (1023-34-316)

2:00PM Oscillatory Criteria for a Three Dimensional System on a Time Scale. Preliminary report.
E. Akin-Bohner, University of Missouri Rolla, Z. Dosla, Masarykova Univerzita, and B Lawrence*, Marshall University (1023-34-1263)

2:30PM Asymptotic stability for 2x2 dynamic systems on time scales. Preliminary report.
Gro Hovhannisyan, Kent State University (1023-34-369)

3:00PM Boundedness in Functional Dynamic Equations On Time Scales.
Elvan Bohner, University of Missouri-Rolla, and Youssef Naim Raffoul*, University of Dayton (1023-34-475)

3:30PM Oscillation and nonoscillation for impulsive dynamic equations on certain time scales.
Mouffak Benchohra, Samira Hamani, Universite de Sidi Bel Abbes, and Johnny Henderson*, Baylor University (1023-34-26)

4:00PM On the number of positive periodic solutions of functional dynamic equations on time scales and population models.
Jo Hoffacker*, Clemson University, and Doug Anderson, Concordia College (1023-34-803)

4:30PM A Fourier Transform on a Basic Adaptive Grid.
Andreas L. Rufing, Munich University of Technology (1023-39-820)

5:00PM The Time Scale Fourier Transform. Preliminary report.
John M. Davis*, Ian A. Gravagne, Billy J. Jackson, Robert J. Marks and Alice A. Ramos, Baylor University (1023-42-1290)
5:30 PM
The Time Scale Fourier Transform. Preliminary report.
John M. Davis, Baylor University, Ian Gravagne, Dept. of Electrical and Computer Engineering, Baylor University, Billy J. Jackson*, Baylor University, Robert J. Marks, Dept. of Electrical and Computer Engineering, Baylor University, and Alice Ramos, Dept. of Mathematics, Baylor University (1023-39-751)

AMS Special Session on Arithmetic Geometry, II
1:00 PM – 5:55 PM
Organizers: Matthew H. Baker, Georgia Institute of Technology
Bjorn Poonen, University of California Berkeley

1:00 PM
Another n-point abc Conjecture.
Robert L Benedetto, Amherst College (1023-11-720)

1:30 PM
Arithmetic of dynamical Green’s functions.
Matthew H. Baker, Georgia Institute of Technology (1023-11-631)

2:00 PM
Stable Reduction of $X_0(p^n)$*. A Progress Report.
Ken McMurdy, Rose-Hulman Institute of Technology (1023-11-988)

2:30 PM
Multiplying Modular Forms.
Martin H. Weissman, University of California, Santa Cruz (1023-11-556)

3:00 PM
A family of K3 surfaces associated to a series for 1/pi. Preliminary report.
H A Verrill*, Louisiana State University, and Heng Huat Chan, National University of Singapore (1023-11-1304)

3:30 PM
Michael O Joyce*, Tulane University, and Zachariah C Teitler, Southeastern Louisiana University (1023-14-574)

4:00 PM
Drinfeld modular varieties as varieties with many rational points over finite fields.
Mihran Papikian, Stanford University (1023-11-337)

4:30 PM
Average twin prime conjecture for elliptic curves.
Alina Carmen Cojocaru*, University of Illinois at Chicago, Antal Balog, Hungarian Academy of Sciences, and Chantal David, Concordia University (1023-11-1768)

5:00 PM
Explicit computations of Hecke operators on automorphic forms.
Lloyd J Kilford, University of Oxford (1023-11-693)

5:30 PM
The abc conjecture implies Vojta’s height inequality for curves.
Michiel van Frankenhuijsen, Utah Valley State College (1023-11-889)

AMS Special Session on Computational Algebraic and Analytic Geometry for Low-Dimensional Varieties, II
1:00 PM – 5:55 PM
Organizers: Mika K. Seppälä, Florida State University
Tanush T. Shaska, Oakland University
Emil J. Volcheck, Association for Computing Machinery

1:00 PM
The 100th anniversary of the Uniformization theorem.
Peter Buser*, EPF Lausanne, and Mika Seppälä, Florida State University and University of Helsinki (1023-30-718)

1:30 PM
Myrberg Numerical Uniformization of Elliptic and Hyperelliptic Curves.
Robert S Todd, Florida State University (1023-30-1570)

2:00 PM
Speciale identities for cyclic covers of order 3 and representation theory of Symmetric group.
Yaacov Koppelovich, New York, NY (1023-32-247)

2:30 PM
Curves generated on surfaces by the G-M algorithm.
Ludvig Malek, Rutgers University, Newark (1023-51-1382)

3:00 PM
The Rees Algebra and the Moving Curve Ideal.
David A. Cox, Amherst College (1023-14-952)

3:30 PM
Syzygies of toric varieties.
Milena S Hering*, Institute of Mathematics and its Applications, Henry Schenck, Texas A&M, and Gregory Smith, Queen’s University (1023-14-1673)

4:00 PM
Toric surface codes and Minkowski sums.
H Schenck*, Texas A&M University, and John Little, College of the Holy Cross (1023-14-1123)

4:30 PM
Simultaneous Surface Resolution.
Nam Gu, Purdue University (1023-14-1029)

5:00 PM
Linear precision for parametric patches.
Luis D Garcia-Puente* and Frank Sottile, Texas A&M University (1023-14-1716)

5:30 PM
James Ruffo, Texas A&M University (1023-14-1589)

AMS Special Session on Commutative Algebra and Algebraic Geometry, II
1:00 PM – 5:55 PM
Organizers: Paul C. Roberts, University of Utah
Anurag K. Singh, University of Utah
Oana Veliche, University of Utah

1:00 PM
Extended modules. Preliminary report.
W. Hassler, Karl-Franzens-Universitaet Graz, R. Karr, L. Klingler, Florida Atlantic University, and R. Wiegand*, University of Nebraska (1023-13-1139)

1:30 PM
A criterion for integral dependence of modules.
Javad Validashti* and Bernd Ulrich, Purdue University (1023-13-466)

2:00 PM
Asymptotic Castelnuovo-Mumford Regularity.
David Eisenbud, University of California, Berkeley and MSRI (1023-13-1456)

2:30 PM
Ideal Class Semigroups of Overrings.
Lucian F Sega, West Lafayette, IN (1023-13-817)

3:00 PM
Failure of Tameness for Local Cohomology.
Steven Dale Cutkosky*, University of Missouri, and Juergen Herzog, University of Duisburg-Essen, Campus Essen (1023-13-1224)

3:30 PM
A counterexample to an open problem concerning a comparison between the quasiherent and etale cohomological dimension of a scheme.
Gennady Lyubeznik, University of Minnesota (1023-14-681)

4:00 PM
Adams operations and New Intersection.
Greg Piepmeyer* and Mark E Walker, University of Nebraska, Lincoln (1023-19-1237)
### Program of the Sessions – Monday, January 8 (cont’d.)

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:30PM</td>
<td>Non-commutative desingularization of the generic determinant. Preliminary report.</td>
</tr>
<tr>
<td></td>
<td>Ragnar-Olaf Buchweitz, University of Toronto, Graham J Leuschke*, Syracuse University, and Michel Van den Bergh, Universiteit Hasselt (1023-13-1297)</td>
</tr>
<tr>
<td>5:00PM</td>
<td>On the intersection of the curves through a set of points in $\mathbb{C}^2$. Preliminary report.</td>
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<td>Z. Teitler, Southeastern Louisiana University (1023-14-42)</td>
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<tr>
<td>5:30PM</td>
<td>Cayley-Bacharach schemes and their cores. Preliminary report.</td>
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<tr>
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<td>Claudia Polini, University of Notre Dame (1023-13-851)</td>
</tr>
</tbody>
</table>

**MAA Minicourse #11: Part B**

1:00 PM – 3:00 PM

*Origami in undergraduate mathematics courses.*

Organizer: Thomas C. Hull, Merrimack College

**MAA Minicourse #15: Part B**

1:00 PM – 3:00 PM

*Geometry with history for teaching teachers.*

Organizers: David W. Henderson, Cornell University and Daina Taimina, Cornell University

**MAA Minicourse #5: Part B**

1:00 PM – 3:00 PM

*Wavelets and applications: A multidisciplinary undergraduate course with emphasis on scientific computing.*

Organizer: Patrick J. Van Fleet, University of St. Thomas

**AMS Session on Operator Theory and Optimal Control, II**

1:00 PM – 5:25 PM

1:00PM | Simplicity of $C^*$-algebras using unique eigenstates. |
|       | Lon H. Mitchell, University of Kansas (1023-47-322) |
| 1:15PM | On a class of Integral Operators related to the Fock Spaces. |
|       | Ovidiu Furdui, Western Michigan University (1023-47-36) |
| 1:30PM | Weighted shifts whose $p$th root shifts are subnormal. Preliminary report. |
|       | George R. Exner, Bucknell University (1023-47-498) |
| 1:45PM | Monotone variational inequalities revisited. |
|       | Dan D. Pascali, Courant Institute, New York University (1023-47-508) |
| 2:00PM | $C^*$-Algebras of Inverse Semigroups: Amenability and Weak Containment. Preliminary report. |
|       | David Milan, University of Nebraska (1023-47-582) |
| 2:15PM | Topological Degree Theories and Nonlinear Operator Equations in Banach Spaces. |
|       | Dhruba R. Adhikari* and Athanassios G Kartsatos, University of South Florida (1023-47-643) |
| 2:30PM | Rank Preserving Maps on CSL Algebras. |
|       | Jaeedok Kim*, Jacksonville State University, and Robert L Moore, University of Alabama (1023-47-793) |

2:45PM | Using the Leray-Schauder Degree for a Degree Involving Maximal Monotone Perturbations of $(S^+)$-operators. |
|       | Boubakari Ibrahimou* and Athanassios G. Kartsatos, University of South Florida (1023-47-932) |
| 3:00PM | Position Registration From Voltage Samples. |
|       | Fadil Santosa and Carl Toews*, IMA (1023-49-757) |

**AMS Session on Numerical Analysis and Computer Science, II**

1:00 PM – 4:25 PM

1:00PM | Immersed Interface Method for wave equations. |
|       | Preliminary report. |
|       | Miguel A. Dumett, University of Southern California (1023-65-206) |
| 1:15PM | Calculating Symmetric Modes of Motion in Molecular Dynamics. |
|       | Mill Shah* and Danny C Sorensen, Rice University (1023-65-463) |
| 1:30PM | On the Fixed Points of a Function and its Corresponding Composite Functions. |
|       | Mohammad K. Azarian, University of Evansville (1023-65-513) |
| 1:45PM | A fast iterative numerical method for the free boundary Bernoulli problem. |
|       | Christopher M Kuster, North Carolina State University (1023-65-514) |
2:00 PM  Robustness of the Multivariate Spline Method for numerical solution of partial differential equations. Preliminary report.
Gerard Awanou, Northern Illinois University (1023-65-538)

2:15 PM  A New Wavelet Multigrid Method.
(1705)  Doreen De Leon, California State University, Fresno (1023-65-644)

2:30 PM  Defect-correction methods for finite element computations of viscoelastic fluid flow.
(1706)  Vincent J Ervin, Jason S Howell* and Hyesuk Lee, Clemson University (1023-65-759)

2:45 PM  Break.

3:15 PM  Removal of the Primary Tumor. Preliminary report.
Juan B. Gutierrez, Generalized Trojan Gene Hypothesis.

3:30 PM  The influence of segregation from reproduction in the long term dynamics of persistent sexually transmitted diseases.
Daniel Maxin* and Fabio A. Milner, Purdue University (1023-92-469)

3:45 PM  A Situation in which a Local Nontoxic Refuge Promotes Pest Resistance To Toxic Crops.
Jemal Said Mohammed-Awel*, Valdosta State University, GA, Karen Kopecky, Dept. of Economics, University of Western Ontario,Canada, and John Ringland, SUNY Buffalo (1023-92-702)

3:00 PM  Break.

3:15 PM  A computational model of tumor therapy.
(1719)  Jin Wang, Duke University (1023-92-707)

3:30 PM  Do implicit measures for female associations with mathematics display cultural or regional biases? Preliminary report.
Rosa A. Del Angel* and Diana W. Verzi, San Diego State University-Imperial Valley Campus (1023-92-920)

3:45 PM  Effect of Input Noise on a Magnetometer with Quantum Feedback.
Zhigang Zhang, Texas A&M University (1023-93-1645)

4:00 PM  An ergodic control problem of a diffusion with jumps. Preliminary report.
(1722)  Cristin Buescu* and Michael I. Taksar, University of Missouri-Columbia (1023-93-1740)

4:15 PM  Doag the Pivotal Role of Commutators in Action. Preliminary report.
(1723)  Dov J Rhodes*, Indiana University, Bloomington, and Nathan Olson, Cal Poly, Pomona (1023-93-1815)

4:30 PM  Electromagnetic Analysis of a MEMS Integrated Frequency Reconfigurable Antenna.
Toby Ann Hale* and Bedri A. Cetiner, Morehead State University, Morehead, KY (1023-94-1436)

4:45 PM  Resistor Networks with Finitely Many Solutions to the Discrete Inverse Boundary Problem. Preliminary report.
Ilya Grigoriev, University of Chicago, Chicago, IL (1023-94-1846)

5:00 PM  Agreement in Circular Societies. Preliminary report.
(1726)  Christopher S. Hardin, Smith College (1023-91-1629)

5:15 PM  From RNA Molecules to Brain Structures: Geometric Measures as Shape Descriptors. Preliminary report.
Christian Laiing, Florida State University FSU (1023-92-125)

AMS Session on Combinatorics, IV

1:00 PM – 3:25 PM

1:00 PM  Incidence Matrices and Inequalities for Combinatorial Designs.

(1729)  Doug Bauer, Stevens Institute of Technology, Nathan Kahle*, Seton Hall University, Linda McGuire, Muhlenberg College, and Edward Schmeichel, San Jose State University (1023-05-77)

1:30 PM  Cycles in the Cartesian Product of Two Directed Cycles.
(1730)  Sherry Xiaohua Wu, Cornell University (1023-05-790)
MAA Session on Applications of Discrete Mathematics, II

1:00 PM – 4:55 PM

Organizers: Thomas Koshy, Framingham State College
Thomas Moore, Bridgewater State College

1:00PM
Dynamic service scheduling on directed graphs. (1738)
D. Jacob Wildstrom, University of California, San Diego (1023-D1-633)

1:20PM
Borderline Behavior for 2x2 Iterative Systems. (1739)
Samer Habre*, Lebanese American University, Beirut, and Jean Marie McDill*, California Polytechnic State University, San Luis Obispo (1023-D1-879)

1:40PM
Derangements, Probability, and Calculus. (1740)
Thomas Koshy, Framingham State College, Framingham, MA 01702 (1023-D1-1126)

2:00PM
Approximative policies for Preemptive Stochastic Online Scheduling. (1741)
Nicole Megow*, TU Berlin, and Tjark Vredeveld, Maastricht University (1023-D1-1226)

2:20PM
Generating Functions and the Prisoner’s Dilemma on Graphs. (1742)
Stephen Devlin* and Reza Dibadj*, University of San Francisco (1023-D1-1327)

2:40PM
Counting Point-Determining Graphs Using Joyal’s Theory of Species. (1743)
Ji Li, Brandeis University (1023-D1-1357)

3:00PM
The Geometry Behind Paradoxes of Voting Power. (1744)
Michael A. Jones, Montclair State University (1023-D1-1419)

3:20PM
Visualizing Binomial Identities using PascaGaloisJE. (1745)
Michael J. Bardzell, Salisbury University (1023-D1-1601)

3:40PM
Dependence Among Random Binary Vectors. (1746)
Preliminary report.
Neil J. Calkin and Shannon R. Lockard*, Clemson University (1023-D1-1625)

4:00PM
Exploring Graph Theory Using a Comprehensive Database of Graphs. (1747)
Jason Grout, Brigham Young University (1023-D1-1700)

4:20PM
The Hat Problem and Coding Theory. Preliminary report.
Ann E Moskol, Rhode Island College (1023-D1-1811)

4:40PM
Designing the right mix for DNA self-assembly. (1749)
N Jonoska, G L McCollm and Ana Staninska*, University of South Florida (1023-D1-1878)

MAA Session on Assessment of Student Learning in Undergraduate Mathematics, II

1:00 PM – 2:40 PM

Organizers: William Martin, North Dakota State University
Bernard L. Madison, University of Arkansas

1:00PM
Program Assessment - What Worked and What Did Not Work. (1750)
Jim Fulmer*, University of Arkansas at Little Rock, and Tom McMillan, State University of New York at Utica (1023-D5-1793)

1:15PM
Learning-focused Exam Construction. (1751)
James S. Rolf*, Michael A. Brilleslyper and R. Scott Callihan, United States Air Force Academy (1023-D5-1837)

1:30PM
From Pre-tests to Capstones. Preliminary report. (1752)
Therese Shelton, Southwestern University (1023-D5-1633)

1:45PM
Students Assessing Other Students: Competition is the Great Motivator to Learn. Preliminary report.
Barbra S. Melendez* and Tasha Williams, United States Military Academy (1023-D5-438)

2:00PM
Assessing Student Performance in College Algebra with WebWork. (1754)
Alberto Candel*, CSUN, and Juana Sanchez, UCLA (1023-D5-1420)

2:15PM
Using Cumulative Assessment to Enhance the Mathematics Experience of College Students at the Entry Level.
Blanche S. Presley* and Barry J. Monk, Macon State College (1023-D5-123)

2:30PM
A Misadventure with a Web-based Assessment Method.
Louis M. Beagris, Kean University (1023-D5-1816)

MAA General Contributed Paper Session, VIII

1:00 PM – 4:25 PM

Organizers: Eric S. Marland, Appalachian State University
Jay A. Malmstrom, Oklahoma State Community College

1:00PM
Primordial Black Holes and Large Scale Structure. Preliminary report.
Adam Drake, University of Houston-Downtown (1023-Z1-1096)

1:15PM
The Aeroacoustics of Turbulent Coanda Jet Flows. (1757)
Jason C Fox* and Caroline P Lubert, James Madison University (1023-Z1-317)
Monday, January 8 – Program of the Sessions

1:30 PM
Three Dimensional Computational Model of Water Movement in Plant Root Growth Zone. Preliminary report.

Brandy S. Wiegers*, Angela Y. Cheer, University of California Davis, and Wendy K. Silk, Department of Land, Air and Water Resources, University of California, Davis (1023-Z1-1689)

1:45 PM
Verifying hydraulic design of the water-conducting networks taking into account the maintenance of the reliability.

Boli Yarkulov, Samarkand State Civil Engineering and Architectural Institute (1023-Z1-230)

2:00 PM
Keeping the Doors Open: A Summer Algebra Camp for Underrepresented Minority Middle Schoolers. Preliminary report.

John B Fink, Kalamazoo College (1023-Z1-835)

2:15 PM
Models in my head "How a blind student sees graphs and their equations".

Aldo R Maldonado, Park University (1023-Z1-517)

2:30 PM
What do business students need to know about math? Preliminary report.

Julia Darby Head*, G. Brock Williams and Amanda Michelle Wheeler, Texas Tech University (1023-Z1-1731)

2:45 PM

Cora Neal*, Sonoma State University, and Deborah Narang, University of Alaska Anchorage (1023-Z1-306)

3:00 PM
Mathematics Courses for Future Grade 1-6

Judith Covington, Louisiana State University Shreveport (1023-Z1-852)

3:45 PM
K S teachers explore the nature of rational numbers: A case for inquiry in a mathematics specialist program.

Aimee J Ellington* and Joy W Whitenack, Virginia Commonwealth University (1023-Z1-359)

3:30 PM
Professors in the Schools at Morehead State University. Preliminary report.

Mike Dobranski, Morehead State University (1023-Z1-1761)

4:00 PM
Inequalities Through Geometry.

Anand Kumar, Ramanujan School of Mathematics (1023-Z1-606)

4:15 PM
Sharing Triangles, Geometric Triangles, and Pascal’s Triangle. Preliminary report.

Charles J Kickey*, Valdosta State University, Jun Ji, Kennesaw State University, and Arsalan Wares, Valdosta State University (1023-Z1-1091)

4:45 PM

Robert D. Pooliack, Norwich University (1023-Z1-1395)

1:15 PM
WvEB Math: College Algebra and Trigonometry for High School Students.

Michael Mays* and Laura Pyzdrowski, West Virginia University (1023-Z1-315)

1:30 PM
ORIFCUT: Proposal of teaching in Basic Education (Level K4 and K5).

Alberto de León de León* and Lineth Alejandra De León Torres, Instituto Tecnológico de C. Madero (1023-Z1-1611)

1:45 PM
Using WeBWork to foster reading. Preliminary report.

George R. Exner, Bucknell University (1023-Z1-499)

2:00 PM
Pre-calculus ILAPs as a path to QL.

Aaron Montgomery, Central Washington University (1023-Z1-1398)

2:15 PM

Shumei C Richman, Midlands Technical College (1023-Z1-1258)

2:30 PM
Couple Interactive Computer Based Math Games.

Hongbiao Zeng, Fort Hays State University (1023-Z1-1233)

2:45 PM
Who Are the Best Sluggers in Baseball?

Steve Alan Krevisky*, Middlesex Community College, Randy Taylor, Los Positas College, and Rodrigo Faria, university of Sao Paulo Western (1023-Z1-1786)

3:00 PM
Placement Made Personal. Preliminary report.

John C Nardo and Judith L Gieger*, Oglethorpe University (1023-Z1-672)

3:15 PM
Helping First-Semester Freshmen Mathematics Majors Develop Proofs. Preliminary report.

Bonnie Gold, Monmouth University (1023-Z1-632)

3:30 PM
Getting Students to Learn from their Mistakes.

Vera Cherepinsky, Fairfield University (1023-Z1-1724)

3:45 PM

Clyde L. Greeno, The MALEI Mathematics Institute (1023-Z1-927)

4:00 PM
Mathematics and the TBR Teacher Preparation Collaborative. Preliminary report.

Anant P Godbole, East Tennessee State University (1023-Z1-1258)

4:15 PM
Pre-service Teachers enhance their Mathematical Understanding Through Journal writing. Preliminary report.

Barba Patton* and Carol Klages, University of Houston-Victoria (1023-Z1-1818)

MMA Panel Discussion

1:00 PM – 2:20 PM


Organizers: Joan Ferrini-Mundy, Michigan State University

Raven McCrory, Michigan State University

Presenters: Michael Frasier, University of Tennessee

Joan Ferrini-Mundy

Raven McCrory

Sharon Senk, Michigan State University

William Schmidt, Michigan State University

MMA General Contributed Paper Session, IX

1:00 PM – 4:25 PM

Organizers: Eric S. Marland, Appalachian State University

Jay A. Malmstrom, Oklahoma City Community College

1:00 PM
Enhancing student interest in mathematics with the course related multimedia tools.

Atul N. Roy, Montgomery College (1023-Z1-1210)
AMS Session on Probability and Statistics, II
1:30 PM – 4:55 PM

1:30PM  Gail Burrill, Michigan State University

MathNerds, Moore Method, and mathematics education: What do they have in common?
Organizers: W. Ted Mahavier, Lamar University
Laurie O. Cavey, James Madison University
Panelists: Terry McCabe, Texas State University
G. Edgar Parker, James Madison University
Hiroko K. Warshawer, Texas State University
Max L. Warshawer, Texas State University
Alexander White, Texas State University
Laurie O. Cavey

AWM Workshop Panel Discussion
1:00 PM – 2:15 PM

Critical career decision stages: Research and funding opportunities.
Moderator: Claudia Polini, University of Notre Dame
Kathleen O’Hara, Mathematical Sciences Research Institute
Barbara Lee Keyfitz, Fields Institute and University of Houston
Michelle D. Wagner, National Security Agency

AMS Session on Probability and Statistics, II
1:30 PM – 4:55 PM

1:30PM  Blake Hunter, University of California, Davis, Alan Krikun*, Chau Nguyen, Jenny Switkes and Hubertus von Bremen, California State Polytechnic University, Pomona (1023-60-1863)

1:45PM  A Single-server Poisson Queueing System with Delayed-Service.
Aliakbar Montazer Haghighi*, Dimitar P Mishev, Prairie View A&M University, and Stefanka S Chukova, Victoria University of Wellington (1023-60-239)

2:00PM  Laws of Large Numbers in D[0, 1].
Paul H Bezandry, Howard University (1023-60-658)

2:15PM  The submartingale problem for a class of degenerate elliptic operators.
Richard F. Bass, University of Connecticut, and Alexander Lavrentiev*, University of Wisconsin - Fox (1023-60-705)

2:30PM  Mutual Information for a Multivariate T-Distribution. Preliminary report.
Walfredo R Javier*, Southern University-BR, and Arjun K Gupta, Bowling Green State University (1023-60-970)

2:45PM  Pedagogical Utilization and Assessment of the Statistic Online Computational Resource in Introductory Probability and Statistics Courses.
Ivo D Dinov*, Juana Sanchez and Nicolas Christou, UCLA Statistics (1023-62-01)

3:00PM  Statistical Modeling of Terrain Profiles.
Tze-Chien Sun and Jinfeng Wei*, Wayne State University (1023-62-809)

3:15PM  Comparing Control Charts With Estimated Parameters.
Maria E. Calzada* and Stephen M. Scariano, Loyola University New Orleans (1023-62-1326)

3:30PM  Break.

Evgenia Rubinshtein*, University of Central Arkansas, and Anuj Srivastava, Florida State University (1023-62-1492)

4:00PM  Impact of exogenous factors on patients expiratory volume. Preliminary report.
Rachid Bekralas, BMCC City University (1023-62-1681)

Ashraf F ELHoubi, Lamar University (1023-62-377)

4:30PM  A Comparison of Data Mining Courses Taught Across Disciplines. Preliminary report.
Alan M Safer, California State University, Long Beach (1023-62-379)

4:45PM  Smooth Inference for Survival Functions with Arbitrarily Censored Data.
Kirsten Doehler*, University of North Carolina Greensboro, and Marie Davidian, North Carolina State University (1023-62-676)

ASL Contributed Papers
2:00 PM – 4:00 PM

Organizer: Marcia Groszek, Dartmouth College

2:00PM  Effective Souslin trees and degrees in α-recursion theory.
François Dorais, Dartmouth College (1798)

2:25PM  The strength of the rainbow Ramsey theorem.
Joe Milet*, University of Chicago, and Barbara Csima, University of Waterloo (1799)

2:50PM  Turing computable embeddings into equivalence structures.
Sara Miller, University of Notre Dame (1800)

3:15PM  Classification of a family of countably universal H-free graphs.
Rehana Patel, St. John’s University (1801)

3:40PM  The Boltzmann principle and protein primary structure.
Dennis F. Cudia, Rockford, IL (1802)

AWM Workshop: Research Presentations by Recent Ph.D.‘s, II
2:30 PM – 4:20 PM

Sarah G Raynor, Wake Forest University (1803)

3:00PM  The Role of the Jacobson Radical in the Baer-Kaplansky Theorem for Torsion-Free Modules over a Complete Discrete Valuation Domain.
Mary K. Flagg, University of Houston (1023-20-845)
3:30PM  Diffusion Flame Stability.
(1805)  Amy B. Moore*, Alma College, and Milan Miklavcic, Michigan State University
        (1023-35-1082)

4:00PM  Petite K-types and Unitary Representations.
(1806)  Alessandra Pantano, Cornell University
        (1023-22-901)

MAA Minicourse #6: Part B

3:30 PM – 5:30 PM
 WeBWorK 2: An Internet-based system for generating and delivering homework.
 Organizers: Arnold K. Pizer, University of Rochester
        Michael E. Gage, University of Rochester
        Vicki Roth, University of Rochester

AMS Banquet Reception

6:30 PM – 7:30 PM

AMS Banquet

7:30 PM – 10:30 PM
 Susan J. Friedlander  James J. Tattersall
        AMS Associate Secretary  MAA Associate Secretary
        Chicago, Illinois  Providence, Rhode Island