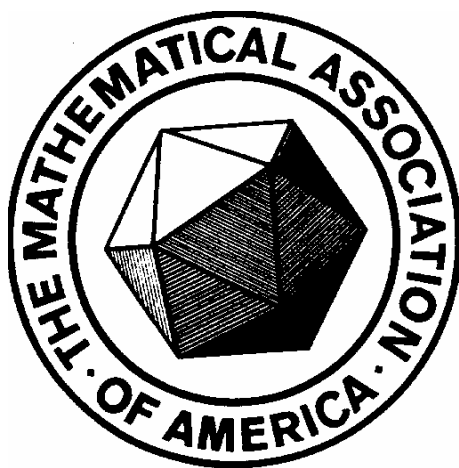


**The Mathematical Association of America
New Jersey Section**



**Fall Meeting
Monmouth University
West Long Branch, NJ**

Sunday, November 6, 2005

Abstracts and Biographies of Speakers

Alternating Sign Matrices

David Bressoud, Macalester College

This will be an overview of what is known and what is conjectured about Alternating Sign Matrices, a combinatorial structure with ties to partition theory, representation theory, and statistical mechanics. The talk will include an overview of the story of the Alternating Sign Matrix Conjecture, a tale that begins with a Lewis Carroll algorithm for evaluating determinants and ends with Kuperberg's realization that the square ice model from statistical mechanics held the key to the solution.

David Bressoud is DeWitt Wallace Professor of Mathematics at Macalester College in St. Paul, MN. He studied with Emil Grosswald at Temple University and taught at Penn State (1977–1994). He has received the MAA Distinguished Teaching Award (Allegheny Mountain Section), the MAA Beckenbach Book Award for *Proofs and Confirmations*, and has served as MAA Polya Lecturer, 2002–04. He has published over fifty research articles. Other books include *Factorization and Primality Testing*, *Second Year Calculus from Celestial Mechanics to Special Relativity*, *A Radical Approach to Real Analysis*, and, with Stan Wagon, *A Course in Computational Number Theory*. He chairs CUPM and has served as chair of the AP Calculus Development Committee.

Packing Equal Discs in the Plane

Ronald Graham, University of California - San Diego

A classical problem in geometry deals with finding the densest packings of equal discs in the Euclidean plane. While the solution to this problem has been known for more than a hundred years (hexagonal is best), there are many variations of this problem which are completely unsolved. In this talk, I will describe some of what is currently known, and what is still unknown.

Ron Graham worked for many years at Bell Labs and then AT&T Labs in New Jersey. He now is the Irwin Jacobs Chair of Computer and Information Science at the University of California at San Diego.

Computer Simulations of Blood Flow in Atherosclerotic Arteries

Biyue (Betty) Liu, Monmouth University

Atherosclerosis is a disease of large- and medium-size arteries, which involves complex interactions between the artery wall and the blood flow. It is widely believed that atherosclerosis development and progression are affected by many

risk factors, such as vascular geometry, static pressure, wall shear stress, blood viscosity, flow velocity, etc. Therefore it is important to study local flow characteristics in order to understand the role of arterial fluid dynamics in the genesis of atherosclerosis. I will present my work on the investigation of blood flow in atherosclerotic arteries by computer simulations. Through numerical solutions obtained under various values of physiological parameters we will observe the flow pattern in curved arteries with stenosis, and we will also see the effect of artery geometry (angle of bend, size of stenosis) on the hemodynamic characteristics such as secondary flow, flow separation, wall shear stress (WSS) and pressure drop along the inner/outer wall of curved arteries.

Biyue (Betty) Liu received her Ph. D. in Applied Mathematics from the University of Maryland in 1993. She taught at the University of Wyoming from 1993 to 1996 and at the University of Rhode Island from 1996 to 2000. She is currently working at Monmouth University, New Jersey. Her research interests include numerical solutions of partial differential equations, mathematical modeling, and computational fluid dynamics. Recently, she has been working on the simulation of blood flow in curved arteries.

Abstracts and Biographies of Workshop Leaders

The CUPM Curriculum Guide 2004

David Bressoud, Macalester College

The MAA Committee on the Undergraduate Program in Mathematics (CUPM) updates its recommendations for the undergraduate curriculum in mathematics roughly every ten years. The most recent and the most extensive set of recommendations ever produced by the CUPM was published in February 2004. This is the first CUPM curriculum guide to look at all mathematics courses and the needs of all students taking mathematics rather than dealing solely with the preparation of majors in the mathematical sciences. This workshop will explain what can be found in this guide and how it can be used to leverage change at your institution.

See his biography under his talk, above.

Using Web-Based Homework Systems

Holly Carley, Rutgers University and Richard Kuntz, Monmouth University

This workshop will present two web-based systems for homework, one (MUTester) designed and implemented by the speaker, the other (WeBWork)

designed originally at the University of Rochester and then scaled up for use in larger classes as well as smaller classes. The speakers will describe how to enter problems for students to work on, how students enter their results and get feedback, and how faculty can use the records of these interactions to inform their teaching and grading.

Holly Carley is currently a Hill Assistant Professor at Rutgers University. Her primary research interest is mathematical physics. She received her Ph.D. from University of Virginia, Charlotte. While she was a post-doctoral fellow at Rutgers last year, she helped the faculty and technology staff with WeBWorK.

Richard Kuntz received his Ph.D. from the University of Maryland in Commutative Ring Theory. He was a member of the faculty of Monmouth University from 1968 until retiring in June 2004. At Monmouth, he served in a variety of positions during his 36 years, including Chair of Mathematics, Chair of Computer Science, Dean of Graduate Studies, Dean of the School of Information Sciences and Technology, Vice President for Technology, and Vice President of Planning and Construction. For a period of 15 years he was the senior administrative officer responsible for all technology on campus. He designed the Mathematics Department's first computer lab, and for the last seven years has been developing and improving the system he will demonstrate, MUTester.

Mathematics Career Workshop

Mark Bailey, SAS Institute, Amy Cohen, Rutgers University, David Sze, Monmouth University, and Christopher Tong, Merck

At this workshop, aimed primarily at students attending the meeting, three people who have worked using mathematics in industry, and one person who can discuss graduate work in mathematics, will talk about careers in mathematics: what do you need in terms of academic background, what kinds of jobs you can find, what you do in these jobs.

ANNOUNCEMENTS

Lunch discussion tables for the Fall 05 meeting, organized by Theresa Michnowicz, New Jersey City University.

There will be seven discussion tables at lunch, as well as tables dedicated to Project NJ-NExT participants.

1. Using the CUPM Curriculum Guide to Leverage Change, David Bressoud, Macalester College
2. Connecting Advanced Undergraduate Mathematics Content to the High School Curriculum, Amy Cohen, Rutgers University

3. Philosophy of Mathematics: Open Discussion, Bonnie Gold, Monmouth University
4. Five Things That the MAA Should Be Doing But Isn't (or the other way around)! Ronald Graham, University of California - San Diego
5. MUTester: Monmouth's On-line Homework and Quiz System, Richard Kuntz, Monmouth University
6. Teaching Mathematical Modeling Courses, Betty Liu, Monmouth University
7. Teaching Undergraduate Mathematics in On-line Courses, Joel Pitt, Georgian Court University

Those who pre-registered (online or during morning registration) have priority at these discussion tables. We look forward to a set of lively and interesting discussions!

DINNER HONORING INVITED SPEAKERS

The Section will honor the invited speakers at dinner following the meeting. Everyone is cordially invited.

MAA-NJ Award for Distinguished Service to the Section

The MAA-NJ Award for Distinguished Service to the Section was awarded to Revathi Narasimhan of Kean University at the Spring, 2005 New Jersey MAA Section meeting at Middlesex County College on April 2, 2005. Professor Narasimhan has served the section as Vice Chair for Speakers 1999-2001 (actually beginning work before her official term began), Program Co-editor 1999-2000, Workshop Organizer 2003-2004, local arrangements coordinator for the spring, 2003, meeting at Kean University, and speaker for NJ-NExT. She originated and maintained a section e-mail list since 2003, and in many other ways in less official capacities has served the section.

MAA-NJ Spring 2006 Meeting: 50th Anniversary Meeting

Mark your calendar for the Spring 2006 meeting, the 50th anniversary of MAA-NJ meetings. It will be held at Georgian Court University, Lakewood, NJ on Saturday, April 8, 2006 in conjunction with the third annual *Garden State Undergraduate Mathematics Conference*. We have a program that you won't want to miss. The list of invited speakers includes Robert Devaney and Judith Grabiner.

MAA election for NJ Governor

Patricia Clark Kenshaft, Montclair State University and Bloomfield College, and Lawrence D'Antonio, Ramapo College, are the candidates for MAA-NJ Governor (2006-2009). The MAA will mail ballots to the membership in Spring 2006.

(continued page 7, after schedule)

Mathematical Association of America
New Jersey Section
Fall 2005 Meeting Program
All talks (except workshops) in Bey Hall, Young Auditorium

8:30 – 9:30	Registration and Coffee, Bey Hall Lobby
8:30 – 1:30	Book Exhibits, Bey Hall Lobby
9:30 – 9:40	Welcome by Paul G. Gaffney II President, Monmouth University
9:40 – 10:30	Computer Simulations of Blood Flow in Atherosclerotic Arteries <i>Biyue (Betty) Liu</i> , Monmouth University Presider: B. Lynn Bodner, Monmouth University
10:30 – 11:10	Intermission (Coffee and Book Exhibits) (Presentation by Richard Lynch of Wiley on WileyPLUS. It is a web-based course and homework management software for professors and interactive homework for students; in Bey Hall 126)
11:10 – 12:25	<u>Simultaneous workshops:</u> The CUPM Curriculum Guide 2004 , <i>Young Auditorium</i> <i>David Bressoud</i> , Macalester College Presider: Susan Marshall, Monmouth University Web-Based Homework Systems , <i>Howard Hall 545</i> <i>Holly Carley</i> , Rutgers University, and <i>Richard Kuntz</i> , Monmouth University Presider: Bonnie Gold, Monmouth University Math Career Workshop for Students , <i>Bey Hall 128</i> <i>Mark Bailey</i> , SAS Institute, <i>Amy Cohen</i> , Rutgers University, <i>David Sze</i> , Monmouth University, and <i>Christopher Tong</i> , Merck Presider: Thomas Smith, Monmouth University NJ-NExT (accepted NJ-NExT fellows only), <i>Bey Hall 127</i>
12:30 – 1:40	Lunch, The Club, rooms 107-109 (Book Exhibits end at

1:40 – 2:30	1:40) Alternating Sign Matrices David Bressoud , Macalester College Presider: Amy Cohen, Rutgers University
2:30 – 2:55	Section business meeting, including consideration of by-laws revision
2:55 – 3:10	Intermission (Silent Auction bidding ends at 3:10)
3:10 – 4:00	Packing Equal Discs in the Plane Ronald Graham , University of California – San Diego Presider: Patricia Clark Kenschaft, Montclair State University/Bloomfield College
4:00	Drawing of door prizes and announcement of Silent Auction Winners (must be present to win)
5:00	Dinner honoring invited speakers

(continued from p. 5)

Call for contributed papers / lunch table discussion topics, Spring 2006 Meeting

There will be one to four general contributed paper sessions at the MAA-NJ Spring 2006 Meeting. All papers submitted by the deadline will be considered by the Committee for the sessions on the bases of *quality of the paper and the goal of broadening participation*. Note that papers are no longer accepted on a first-come, first-accepted basis. Please submit *title*, three to four line *summary* for the program, and *one page abstract* by March 3, 2006, to Theresa C. Michnowicz, New Jersey City University, tmichnowicz@njcu.edu, 201-200-3219. Topics for lunch discussion tables at that meeting should also be sent to tmichnowicz@njcu.edu by February 11, 2006. Further information will be posted on the section website, www.maa.org/newjersey.

Garden State Undergraduate Mathematics Conference

MAA-NJ is proud to host the third annual Garden State Undergraduate Mathematics Conference (GSUMC), which will be held concurrently with its spring meeting on Saturday, April 8, 2006, at Georgian Court University, Lakewood, NJ.

Congratulations to Brian Hopkins of Saint Peter's College. At Mathfest, 2005, Brian was awarded the George Pólya Award (jointly with Robin J.

Wilson) for their article, "The Truth About Königsberg," published in the *College Mathematics Journal*, v. 35, May 2004, pp. 198-207.

By-Laws Revision Consideration: The Section will vote on revisions to the by-laws at this meeting. The proposed revisions were sent out with the meeting announcement to all MAA-NJ members, as required by the current by-laws. There will be opportunity to discuss the proposed revisions before section members vote on the proposed changes during the business meeting. (By-Laws Revision Committee: Bonnie Gold (chair), Monmouth University, Mark Korlie, Montclair State University, Reginald Luke, Middlesex County College, Theresa C. Michnowicz, New Jersey City University.)

Call for Nominations for the New Jersey Section Distinguished Teaching Award

The New Jersey Section Distinguished Teaching Award Selection Committee is seeking nominations for the 2006 Distinguished College or University Teaching of Mathematics Award. Anyone may nominate a New Jersey Section member for this award. The winner will be honored during the Spring 2006 meeting and will be widely recognized and acknowledged within the Section. There are many outstanding teachers of mathematics in the NJ Section, but to be awarded this recognition, they must first be nominated by their colleagues. Please consider nominating an inspiring, respected, or influential deserving colleague for this prestigious award.

Based on the Section Selection Committee's recommendation, the winner will also be the New Jersey Section's candidate for the 2007 MAA Deborah and Franklin Tepper Haimo Awards for Distinguished College or University Teaching of Mathematics. There will be at most three national awardees, each of whom will be honored at the national MAA meeting in January 2007 with a certificate and a check for \$1,000.

Documents outlining the nomination process are on the New Jersey Section's web site at <http://maa.org/newjersey>. Please send nomination packets to: Amy Cohen, Rutgers University, Department of Mathematics, 110 Frelinghuysen Road, Piscataway, NJ 08854-8019; acc@math.rutgers.edu, 732-445-3098. All nomination packets must be received by no later than January 31, 2006.

National MAA-AMS meetings

MAA-AMS Joint Mathematics Meeting: San Antonio, TX, January 12-15, 2006

MathFest: Knoxville, TN, August 10-12, 2006

MAA-AMS Joint Mathematics Meeting: New Orleans, LA, January 4-7, 2007

MathFest: San Jose, CA, August 3-5, 2007

MAA-AMS Joint Mathematics Meeting: San Diego, CA, January 6-9, 2008

Governor's Report from Mathfest 2005

MathFest 2005 was held from August 4-6 in the sunny, dry-heated highlands of Albuquerque, New Mexico, attended by about 1078 conference participants. There was a diverse and interesting mix of presentations at the three-day conference. At the Hedrick Lecture Series, Jeffrey Lagarias (U of Michigan, but formerly from Bell Labs, NJ) delivered a captivating 3-part lecture on *Crystals, Tiling and Packing*. William Yslas Velez (U of Arizona) talked about *Increasing the Number of Mathematics Majors* for his James Leitzel Lecture, while Underwood Dudley (Florida State University) rendered a revealing recounting of the historical development of *Calculus Texts*.

MAA President, Carl Cowen, presided at the August 3rd Board of Governor's meeting. Upcoming national officers recently elected are Joseph A. Gallian (President-Elect), Carl Pomerance (First Vice President), and Deanna Haunsperger (Second Vice President). Kudos to our very own Amy Cohen (Rutgers University) for being one of three candidates for the position of First Vice-President. Eleven new section or at-large governors were seated at the Board meeting in the standard cycle of three year service. The traditional appointments for MAA committees and editorships were approved. The Committee on Mathematics and the Environment was disbanded, being replaced by the SIGMAA (special interest group) on Environmental Mathematics.

Bylaw revisions were accepted by the Board of Governors for the Allegheny Mountain Section, the Iowa Section and the Kansas Section. In this regard, the updating of bylaws for the New Jersey Section have been sent to the MAA Committee on Sections for review and at this fall meeting will be placed before the members of the New Jersey Section for ratification.

The financial status of the MAA organization is faring well with a good annual audit that did not have even a management letter for any material weaknesses or reportable conditions. As Treasurer John Kenelly is apt to say, MAA finances is a series of four sevens: \$7 million operating budget, \$7 million in grants, \$7 million of investments and \$7 million for building projects. Thus, MAA is in very good financial position with good liquidity. Due to cost containment efforts by various MAA directors, the 2004 budget resulted in a \$600,000 operating surplus. In regards to MAA dues, there is presently study of the dues structure and any changes will be presented to the next Board of Governors meeting in January 2006.

Good news occurred from the international scene! The U.S. Mathematics Olympiad student team captured 2nd place (to China) out of 93 teams in the 2005 International Mathematical Olympiad held this past summer in Merida, Mexico.

A New Jersey student, Hyun Soo Kim, from Hackensack HS, was a gold winner on this team. A past winner, Melanie Wood, now at Princeton University, served as the Deputy Leader for the team. Coincidentally, the next MAA Math Tour is scheduled for China for two weeks (June 6-21) in the Summer 2006. Barbara Osofsky (Rutgers University) is chairing a Subcommittee on Travel Study Tours, part of the MAA Committee on Professional Development.

Project NExT for new collegiate faculty is continuing to thrive with a total of 74 members this year. Included among these are David Nacin (William Patterson University) and Su-Chi Wen (Monmouth University). There is also the opportunity for two-year community college faculty to belong to our local group, or even to qualify for national fellowship through Project ACCCESS (Advancing Community College Careers: Education, Scholarship and Service).

Mathematicians from the New Jersey Section of the MAA continue to represent the State in presentations, contributed papers and committee activity at Mathfest 2005. Among them are the following:

- Bonnie Gold (Monmouth University): *A Modified Moore-Method Number Theory Course*.
- Hieu Nguyen (Rowan University): *Newton's Greatest Blunder*.
- Jay Schiffman (Rowan University): *Pattern Breakers in Elementary Number Theory*.
- Diana Thomas & Michael Jones (Montclair State University): *NIM: A Finite Shift Register Sequence*.
- Su-Chi Wen (Monmouth University): *Course-Embedded Assessment in Mathematics Courses*.

Contributing to the MAA Student Talks were the following:

- Jenny Buontempo (St. Peter's College): *Tableaux Cycling and Catalan Numbers*.
- Nathan Kaplan (Princeton University): *Cubic Global Fields*.
- Nicholas Toombs (Montclair State University): *A Model for Alzheimer's Disease*.
- Haiyun Zhao (Stevens Institute of Technology): *The Dynamics of Poverty and Crime*.

Serving as an organizer for an MAA sponsored event were:

- Bonnie Gold (Monmouth University) for the SIGMAA on the Philosophy of Mathematics.
- Brian Hopkins (St. Peter's College) for the MAA Contributed Paper Session on Nifty Examples in Discrete Mathematics.
- Susan Marshall (Monmouth University) for co-organizing (with Jennifer Christian Smith) the MAA Contributed Paper Session on

Teaching and Learning Proof in Inquiry-Based Courses: Integrating
Research and Practice.

The next Joint AMS/MAA meeting will be held in San Antonio, Texas, January 12-15, 2006 with Keith Devlin (Stanford), Naomi Fisher (U of Illinois at Chicago), Robert Megginson (U of Michigan) and Francis Su (Harvey Mudd College) as invited MAA speakers. NOTE: The joint organizations may have to find a replacement site for the August 2007 meeting, which is slated for New Orleans, LA.

News from NJ departments

New Jersey City University's Mathematics Department welcomes three new faculty members this fall. *Dr. Zhixiong Chen* earned her Ph.D. from University of Massachusetts, Amherst. She then joined University of Connecticut as a post-doctoral fellow. Her mathematical interests include partial differential equations and statistical mechanics. *Dr. Karen D. Ivy* earned her Ph.D. at the University of Mississippi. She was a member of the Mathematics Department at Montclair State University for four years. Her research interests are in mathematics education, more specifically number sense and mathematics teacher knowledge and student learning of mathematics. *Dr. Evan Siegel* received his PhD in mathematics from the CUNY Graduate Center. His dissertation was on the classification of foliations of Euclidian 3-space with Euclidian lines. His current interests are online math educational engineering using JavaScript and Visual Basic. He is also an active researcher in early modern Iranian history.

Raritan Valley Community College has been awarded a Title III grant. *Cyndee Geoffroy* and *Aditi Patel* are Math Department Representatives on the Title III Project at Raritan Valley Community College. The grant is focusing on the improvement of instruction in the areas of developmental Math, English, Reading, and ESL, as well as the development of a student tracking system. *Jaki Fesq* has been awarded Mid Career Fellowship at Princeton University. *Tomas Kovarik* finished the Princeton Mid Career Fellowship program last year. *Siham Alfred* has become Chair of Mathematics Department. RVCC Mathematics Department has been selected to participate in the Conference Board of Mathematical Sciences Survey for Undergraduate Programs in the Mathematical Sciences.

JOIN THE MAA (<http://www.maa.org/mbsvcs/future.html>).

MAA-NJ Officers

Chair	Cathy Liebars, The College of New Jersey
Chair Elect	Mark Korlie, Montclair State University
Vice Chair for	
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Awards Committee	Reginald Luke, Middlesex County College, Theresa C. Michnowicz (chair), New Jersey City University, Naomi Shapiro, Georgian Court University
Nomination Committee	Carol Avelsgaard, Middlesex County College, Larry D'Antonio, Ramapo College, Revathi Narasimhan, Kean University, Theresa Michnowicz (chair), New Jersey City University
Teaching Award Committee	Janet H. Caldwell, Rowan University, Amy Cohen (chair), Rutgers University, Janet Delaney, Passaic County Community College, Virginia Lee, Brookdale Community College, Evan Maletsky, Montclair State University

Acknowledgments The MAA-NJ thanks the Mathematics Department of Monmouth University for their kind hospitality in hosting the meeting, Joseph Malkevitch of York College (CUNY) for a donation to the section, and

Houghton Mifflin, John Wiley & Sons, Springer, and Texas Instruments for donations for the Silent Auction and Door Prizes.