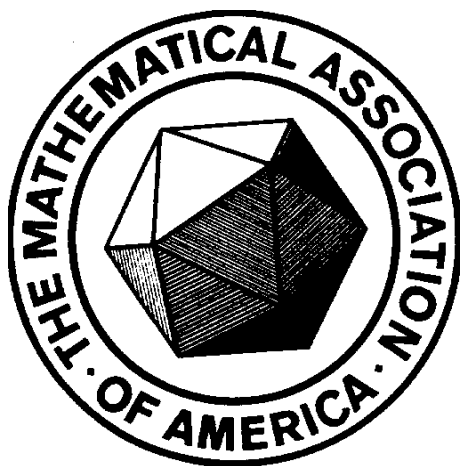


**The Mathematical Association of America
New Jersey Section**



**Fall Meeting
The College of New Jersey
Ewing, NJ**

Saturday, November 13, 2004

Abstracts and Biographies of Speakers

**Forbidden Symmetry--Relaxing the Crystallographic
Restriction**

Frank Farris, Santa Clara University

If you look at enough swatches of wallpaper, you will see centers of 2-fold, 3-fold, 4-fold, and 6-fold rotation. Why not 5-fold centers? They cannot occur, according to the Crystallographic Restriction, a fundamental result about wallpaper patterns, which are defined to be invariant under two linearly independent translations. Even so, we offer convincing pictures that show wallpapers with 5-fold symmetry. How can this be? The talk is intended to be accessible to students who know something about level curves in the plane and linear algebra.

Frank Farris serves as editor of *Mathematics Magazine* through 2005. He hopes to continue its tradition of inspiring and challenging teachers and students of mathematics at the undergraduate level. Awards include a Trevor Evans Award for his article "The Edge of the Universe" in *Math Horizons* and the David E. Logothetti Teaching Award at Santa Clara University, where he has taught since 1984.

**Who Was the Author? Using Statistics to Investigate
Authorship of Anonymous Works of Literature**

David Holmes, The College of New Jersey

This talk looks at the science of stylometry - the statistical analysis of literary style. The evolution of stylometric methods is covered, followed by some case studies using modern computer-based techniques. The importance of statisticians working with specialists in the application area e.g. historians, classicists, is stressed throughout.

David Holmes is a Professor of Statistics at The College of New Jersey. Prior to this he was a Principal Lecturer in Statistics at the University of the West of England, Bristol, where he founded the Bristol Stylometry Research Unit. He has published widely in the field of stylometry and has given many presentations on both sides of the Atlantic. He is a former Secretary of the Association for Literary and Linguistic Computing.

Folding Polygons to Polyhedra (Lecture and Workshop)

Joseph O'Rourke, Smith College

To **fold** a polygon means to glue its perimeter to itself, so that there is no overlap, and no gaps, and the resulting surface is homeomorphic to a sphere. This talk will examine the surprisingly rich question of which polygons can fold to which polyhedra, with special (but not exclusive) concentration on convex polyhedra. Although most polygons cannot be folded to any convex polyhedron, every convex polygon folds to an infinite number of incongruent convex polyhedra. To give a sense of the possibilities, we have established that the familiar Latin cross polygon can fold to a cube, and to exactly 22 other incongruent convex polyhedra. We will describe the connection to a deep theorem of Alexandrov, and introduce a variety of approachable unsolved problems.

The corresponding workshop will have participants cutting out polygons and folding them, as well as exploring continuous analogs, the elegant “pita forms” and “D-forms.”

After graduating from St. Joseph's University (physics and mathematics), **Joseph O'Rourke** studied computer science at the University of Pennsylvania, from which he received the Ph.D. in 1980. He then joined the faculty of Johns Hopkins University as an Assistant Professor. He was promoted to Associate in 1985, and then left in 1988 to found and chair the Computer Science Department of Smith College, as the Olin Professor of Computer Science. Currently he is again chair of the department.

Abstracts and Biographies of Workshop Leaders

Preparing Mathematicians to Educate Teachers (PMET)

Jack Narayan, SUNY at Oswego

Recently there has been a growing interest in creating a mathematics curriculum that promotes a “deep or profound understanding of fundamental mathematics.” Liping Ma and Deborah Ball have described what they mean by the term in relation to mathematics elementary education curriculum. Dick Stanley, Zalman Usiskin, and Carolyn Mahoney have been involved in addressing the topic as it relates to the secondary curriculum. Their approach assumes that: There is an undercurrent of “deeper mathematics” that is implicit in even simple problems of the curriculum; this undercurrent of deeper mathematics is often unrecognized, even by people who have taught the problems many times; and, it

can be captured through what they are calling an “extended analysis” of a problem.

Jack Narayan is a Distinguished Teaching Professor in the Department of Mathematics at SUNY Oswego where he has been since 1970. He served as Dean of Graduate Studies and Research and Director of Research and Sponsored Programs at SUNY Oswego for several years before returning to teaching this fall. His grants to support students, faculty professional development, and curriculum development total almost \$3 million dollars. Currently he is a regional coordinator of the MAA and NSF supported grant “Preparing Mathematicians to Educate Teachers PMET” under the directorship of Dr. Bernie Madison and Alan Tucker. His interests now focus on creating strategies to engage students in their learning. His resume may be found at www.oswego.edu/~narayan.

Folding Polygons to Polyhedra

Joseph O'Rourke, Smith College

See abstract and biography under his talk, above.

ANNOUNCEMENTS

Lunch discussion tables for Fall 04 meeting, organized by Terry Michnowicz, New Jersey City University

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

1. Writing Expository Mathematics, Frank Farris, Santa Clara University
2. Using Statistics to Analyze Literary Style, David Holmes, The College of New Jersey
3. How to Excite Students by Working on Unsolved Problems, Joseph O'Rourke, Smith College
4. Should Changing K-12 Standards Change What We Teach Teachers? Jack Narayan, SUNY at Oswego
5. Mathematics of Finance, Youngna Choi, Montclair State University
6. POMSIGMA: The Applicability of Mathematics: Is it magic?, Bonnie Gold, Monmouth University
7. Teaching Statistics: The Internet and Statistical Models, Julio Guillen, New Jersey City University
8. Developmental Mathematics--What Works and What Doesn't, Sandra Caravella, New Jersey City University
9. How to teach a course on the History of Mathematics, Judit Kardos, The College of New Jersey

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 and the Section Meritorious Service Award winner at dinner following the meeting. Everyone is cordially invited.

MAA-NJ Spring 2005 Meeting

Mark your calendar for the Spring 2005 meeting. It will be held at Middlesex County College, Edison, NJ on April 2, 2004 in conjunction with the second *Garden State Undergraduate Mathematics Conference*. We have a program that you won't want to miss. The list of invited speakers includes Colin Adams, Williams College.

Call for contributed papers and lunch table discussion topics for Spring 2005 Meeting

There will be one general contributed paper session and three sessions on special topics for MAA members at the MAA-NJ Spring 2004 Meeting. Topics of the special sessions will be Mathematics and Art, organized by Lynn Bodner, Monmouth University, bodner@monmouth.edu, Discrete Mathematics: Pedagogy, Projects, Research, organized by Brian Hopkins, St. Peter's College, hopkins@comcast.net, and Applications of Mathematics to Social Sciences and Finance, organized by Youngna Choi, Montclair, choiy@mail.montclair.edu. Papers for the general session will be accepted on a first-come-first-serve basis. Please submit a title and short abstract by March 1, 2005, to the organizer of the session: General contributed papers, Theresa C. Michnowicz, New Jersey City University, tmichnowicz@njcu.edu, 201-200-3219 - also, topics for lunch discussion tables at that meeting should be sent here, with the same deadline.

Garden State Undergraduate Mathematics Conference

MAA-NJ is proud to host the second annual Garden State Undergraduate Mathematics Conference (GSUMC), which will be held concurrently with its spring meeting on Saturday, April 2, 2005, at Middlesex County College, Edison, NJ. Last year's GSUMC was a great success, with nearly 100 students participating. Funded by the MAA and the New Jersey section, GSUMC seeks to promote undergraduate students in presenting their mathematical work (topics can be from any area of mathematics, including history of math, applications of math, and math education). Scheduled activities include student paper/poster presentations, a team problem-solving contest and career-related workshops. For more info: <http://phobos.ramapo.edu/~ldant/GSUMC/gsumc.html>

(continued page 7, after schedule)

Mathematical Association of America New Jersey Section

Fall 2004 Meeting Program

All talks (except workshops) in P101 of the Science Complex

8:30 – 9:30	Registration and Coffee, Lobby, Science Complex
8:30 – 1:30	Book Exhibits, Lobby, Science Complex
9:30 – 9:40	Welcome by Paula Maas Assistant Dean, School of Science, The College of New Jersey
9:40 – 10:30	Folding Polygons to Polyhedra Joseph O'Rourke , Smith College Presider: Connie Yu, New Jersey City University
10:30 – 11:00	Intermission (Coffee and Book Exhibits)
11:00 – 12:15	<u>Simultaneous workshops:</u> Preparing Mathematicians to Educate Teachers Jack Narayan , SUNY at Oswego, P221 Presider: Judit Kardos, The College of New Jersey Folding Polygons to Polyhedra Joseph O'Rourke , Smith College, P224 Presider: Hieu Nguyen, Rowan University NJ-NExT (accepted NJ-NExT fellows only), P229
12:15 – 1:30	Lunch, Brower Student Center room 202 (Book Exhibits end at 1:30)
1:30 – 2:20	Who Was the Author? Using Statistics to Investigate Authorship of Anonymous Works of Literature David Holmes , The College of New Jersey Presider: Katarzyna Potocka, Ramapo College
2:20 – 2:40	Remarks by chair, Cathy Liebars, The College of New Jersey and governor, Reginald Luke, Middlesex County College, of MAA-NJ and ELECTIONS
2:40 – 3:00	Intermission (Silent Auction bidding ends at 3:00)

3:00 – 3:50	Forbidden Symmetry--Relaxing the Crystallographic Restriction <i>Frank Farris</i> , Santa Clara University Presider: Brian Hopkins, St. Peter's College
3:50	Drawing of door prizes and announcement of Silent Auction Winners (must be present to win)
5:00	Dinner honoring invited speakers

Elections at this meeting The Nomination Committee has nominated the following slate of officers (nominations will be accepted from the floor):

Mark Korlie, Montclair State University, for Chair-Elect
Hieu Nguyen, Rowan University, for Vice Chair for Speakers
Naomi Shapiro, Georgian Court University, for Secretary

NJ-NExT workshop The New Jersey section welcomes its 17 new NJ-NExT fellows, whose workshop started last evening and continues during and after this fall meeting, electronically throughout the year, with more workshops at the spring and fall 2005 section meetings. Seven of our new fellows are at two-year colleges. The workshop started Friday afternoon with a session where they introduced themselves and their interests, continued with a session by Amy Cohen on active learning. It continues today with a workshop during the section workshop time on assessment, which Bonnie Gold will give, and these first workshop sessions conclude with a panel of NJ and national NExT fellows (Susan Gaulden, Mark Korlie, Hieu Nguyen, John Saccoman) on balancing responsibilities.

MAA-NJ Fall 2005 Meeting

The Fall 2005 meeting will be held on **Sunday**, November 6 at the Monmouth University, West Long Branch, NJ. Continue checking the Section's web site at <http://maa.org/newjersey> for current information about the Section.

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 2005 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 2005 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 2006 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 2006 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: Mark S. Korlie, Secretary of the MAA-NJ Section, Department of Mathematical Sciences, Montclair State University, Montclair, NJ 07043, korliem@mail.montclair.edu, 973-655-5300. All nomination packets must be received by no later than January 31, 2005.

MAA-NJ Section Meritorious Service Award – 2004

Professor Amy Cohen, of Rutgers University, was awarded the section's Meritorious Service award at the spring, 2004 meeting. Dr. Cohen served as the section Governor from 2000 to 2003, and headed the local arrangements for the section meeting in spring, 2004. She has served on numerous section committees, most recently the Distinguished Teaching Award Committee. She has also been very active in the national organization and a consultant to Project NExT.

National MAA-AMS meetings

Joint Mathematics Meeting: January 5-8, 2005, Atlanta, GA.

MathFest: August 4-6, 2005, Albuquerque, NM.

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

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

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

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

Governor's Report from Mathfest 2004

MathFest 2004 was held in Providence, RI, on August 12-14, 2004, in unsettled weather in advent of the remnants of Hurricane Charley. However, within the Westin Hotel and adjoining Rhode Island Convention Center, the mood was of quiet anticipation and curiosity by over a thousand participants (1143 exactly) awaiting the upcoming presentations and reports.

At the Governors' Meeting on August 11, 2004, the business agenda portrayed organizational stability, awards and celebrations. The national MAA organization continues to fare well with audits of no material weaknesses or reportable conditions, documenting financial status characterized by "four sevens": \$7 million operating budget, \$7 million real estate holdings, \$7 million grants-in-place and \$7 million endowment funds. Total MAA membership has increased over last year's tallies, and book sales and online sales through Amazon are up for MAA publications. The online project, Math Gateway, is anticipating NSF funding to strengthen the MAA Math DL online activities. The second annual MAA Mathematical Study Tour, this time to England, was enjoyed by 17 itinerant mathematicians, relations and friends. The 2005 Tour is scheduled for Mexico under the theme, Mathematics of the Mayans. Project NExT garnished 71 new fellows from 28 out of 29 sections, including Susan Marshall from Monmouth University, NJ, and this fledgling math faculty group displayed strong attendance at MathFest 2004. The USA Mathematical Olympiad took place in April 2004 and the top 12 winners included a New Jersey student, Jae Min Bak, from the Academy of Advancement of Science and Technology, Leonia NJ. Then in July 2004 in Athens, Greece, the USA Math Olympiad Team, the top 6 USAMO winners, achieved an impressive 2nd place result (with 5 gold medals and 1 silver medal) in the 45th International Mathematical Olympiad. Congratulations to our outstanding mathematics students, including Allison Miller, first female US student achieving gold and a perfect score of 42 points.

Section awards for Meritorious Service were voted upon for 5 sections, including that for Barbara Osofsky, Rutgers University, from our own New Jersey section. Also selected were for the Deborah and Franklin Tepper Haimo Award for Distinguished Teaching of Mathematics (Gerald Alexanderson, Santa Clara University; Aparna Higgins, University of Dayton and Deborah Hughes Hallet, University of Arizona), Gung-Hu Award (Robert E. Megginson), Polya Lecturer (Stephen Rudich, Carnegie Mellon University), and Editor-elect for *Mathematics Magazine* (Allen Schwenk, Western Michigan University). Martha Siegel, Towson University, was re-elected to another 5 year term as national MAA Secretary.

Peter Sarnak of Princeton University presented the three-part Hedrick Lecture Series on Ramanujan graphs. Award winner Aparna Higgins delivered the first MAA Invited Address on Pebbling Results by Undergraduate Researchers. Our very own Dawn Alisha Lott, former NJIT math faculty and MAA-NJ Program Chair, gave a colorful presentation as the MAA-NAM David Blackwell Lecture on Mathematical Predictions and Aneurysm Treatment. The

James R.C. Leitzel Lecture was presented by Alan Schoenfeld, UC Berkeley, who painted a sobering picture of Mathematics and the Schools.

Featured presentations and contributed papers by NJ MAA members at this MathFest 2004 included:

- Thomas Hagedorn, The College of New Jersey, Using the Web in Linear Algebra and also Zeros of Fourth Degree Recurrence Relations.
- Javad Namazi, Fairleigh Dickinson University, A Problem of Riemann.
- Pat Kenschaft, Montclair State University, Panel (with B. Schiller): Conversations about Mathematics and the Environment.
- Amy Cohen, Rutgers University, Panel (with David Bressoud): Using the CUPM Curriculum Guide 2004 to Facilitate Change.
- Michael Jones, Montclair State University, Sequences of P/N Positions in NIM without Preperiods.
- Jay Schiffman, Rowan University, Exploring Number Theory with a CAS.
- Carlos Bovell, Mercer County Community College, Allegorizing Algebra: Reaching a Diverse Classroom.
- Alex Powell, Princeton University, Finite Frames and Sigma-Delta Quantization.
- Mika Munakata, Montclair State University, Reading and Writing in Mathematics? The Math Book Club for Undergraduate Mathematics Courses.
- Christopher Simons, Rowan University, with Will Dickinson, Graduate Student Program: Choosing the Right Job for You.

The next national association meeting will be the Joint AMS/MAA Mathematics Meeting to be held in Atlanta, Georgia, January 5-8, 2005. See you there! Reginald Luke, Middlesex County College

News from NJ departments

The Mathematics Department at Monmouth University welcomes two new faculty members, Dr. David Marshall and Dr. Susan Marshall (yes, they are a couple, with a daughter, Gillian), whose mathematical interests are both primarily in number theory (David in structure of classical Iwasawa modules and relationships with Galois group structures; bilinear and quadratic forms in characteristic 2; Susan in p-adic Galois representations, with applications to abelian varieties). In addition, David is interested developing general education courses and in the mathematical education of teachers and Susan is interested how students learn to develop proofs.

This fall, the Department of Mathematical Sciences at Montclair State University (MSU) welcomed Dr. Aihua Li. Dr. Li comes to MSU as a tenure-track Associate Professor by way of Loyola University-New Orleans, where she served as Associate Professor. Dr. Li earned her Ph.D. for the University of Nebraska Lincoln.

The Mathematics Department at New Jersey City University welcomes Dr. Sandra Caravella as its newest member. Dr Caravella was a faculty member at Centenary College in Hackettstown, New Jersey, for 12 years. Her mathematical interests include algebraic geometry (open algebraic surfaces) and the history of mathematical astronomy. Dr. Caravella earned her Ph.D. from Rutgers University.

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

MAA-NJ Officers

Chair	Cathy Liebars, The College of New Jersey
Past Chair	Reginald Luke, Middlesex County College
Vice Chair for	
Speakers	Hieu Duc Nguyen, Rowan University
Innovations	Theresa C. Michnowicz, NJCU
Two-Year Colleges	Carol Avelsgaard, Middlesex County College
Secretary	Mark Korlie, Montclair State University
Treasurer	Karen Clark, The College of New Jersey
Public Information Officer	Michael A. Jones, Montclair State University
Program Editor	Bonnie Gold, Monmouth University
Liaison Coordinator	Theresa C. Michnowicz, NJCU
Student Activities Coordinator	Lawrence D'Antonio, Ramapo College
NJ-NExT codirectors	Bonnie Gold, Monmouth University
	John T. Saccoman, Seton Hall University
Workshop Coordinator	Cathy Liebars, The College of New Jersey
Governor	Reginald Luke, Middlesex County College

Organizing Committee Mark S. Korlie, Montclair State University; Cathy Liebars, The College of New Jersey; Theresa C. Michnowicz, New Jersey City University; Hieu Duc Nguyen, Rowan University

Program Committee Carol Avelsgaard, Middlesex County College; Karen Clark, The College of New Jersey; Larry D'Antonio, Ramapo College; Bonnie Gold, Monmouth University; Michael A. Jones, Montclair State University; Reginald Luke, Middlesex County College

Hosting Committee Karen Clark, Ed Conjura, Nancy Hingston, Jean-Michelet Jean-Michel, Judit Kardos, Cathy Liebars, Aigli Papantonopoulou, Suriza Van der Sandt, David Watson.

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 The College of New Jersey for their kind hospitality in hosting the meeting, and Cambridge University Press, Chapman and Hall/CRC, Springer, and Professor Deborah Bennett, New Jersey City University, for donating books for the Silent Auction and Door Prizes.