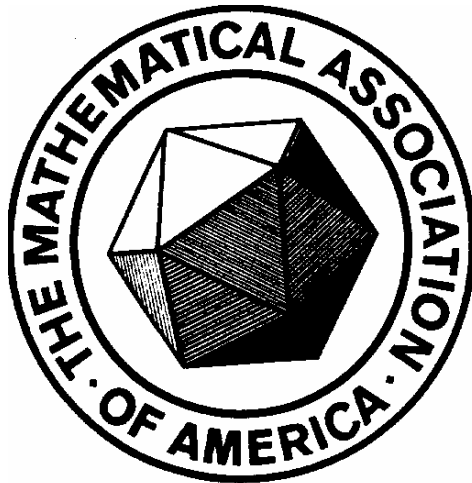


**The Mathematical Association of America
New Jersey Section**



**Fall Meeting
Raritan Valley Community College
North Branch, NJ**

Saturday, November 8, 2003

Abstracts and Biographies of Speakers

How to Always Win at Limbo

or

**You can sum some of the series some of the time, and some of the series
none of the time... but can you sum some of the series ALL of the time?**

Edward B. Burger, Williams College

Have you ever gone out with someone for a while and asked yourself: “How close are we?” This presentation will answer that question by answering: What does it mean for two things to be close to one another? We’ll take a strange look infinite series, dare to mention a calculus student’s fantasy, and momentarily consider transcendental meditation. In fact, we’ll even attempt to build some very exotic series that can be used if you ever have to flee the country in a hurry: we’ll either succeed or fail... you’ll have to come to the talk to find out. Will you be at the edge of your seats? Perhaps; but if not, then you’ll probably fall asleep and either way, after the talk, you’ll feel refreshed. No matter what, you’ll learn a sneaky way to always win at Limbo.

Edward B. Burger is Chair and Professor of Mathematics at Williams College. His research interests are in diophantine analysis and the geometry of numbers. He is the author of over 25 research articles and two books - *The Heart of Mathematics: An invitation to effective thinking* (winner of a 2001 Robert W. Hamilton Book Award), and *Exploring the Number Jungle: A journey into diophantine analysis* (published by the AMS).

Burger is known for his entertaining, energetic, and enlightening presentations. He has lectured at numerous conferences and universities around the world. His over 175 lectures include several AMS-MAA Invited Addresses at winter and summer national meetings; keynote addresses at national NCTM Conferences; and many MAA sectional meetings. He has also made numerous appearances on radio and television including various NPR affiliates and NBC-TV.

Burger was awarded the 2000 Northeastern Section of the MAA Award for Distinguished Teaching and 2001 MAA Deborah and Franklin Tepper Haimo National Award for Distinguished College or University Teaching of Mathematics. He was the 2001 Genevieve W. Gore Distinguished Resident at Westminster College and the 2001 Cecil and Ida Green Honors Professor at Texas Christian University. In 2002-2003 he was the Ulam Visiting Professor at the University of Colorado at Boulder where he was awarded the 2003 Residence Life Teaching Award. Burger is an associate editor of the American Mathematical Monthly. The MAA named him the 2001-2003 Polya Lecturer.

Flow of Complex Fluids: A Mathematical Introduction

L. Pamela Cook, University of Delaware

Complex fluids are central to modern day economy. Manufacturing of polymers (plastics) as well as the development of paints, detergents, foods, and pesticides involve flows of complex fluids. The properties of these fluids differ from those of Newtonian fluids (water). In this talk the physical differences between Newtonian and non-Newtonian (complex) fluids will be discussed and an overview of the mathematical complexities involved in solving non-Newtonian flow problems (systems of coupled non-linear pdes) will be given. The background that would be useful for this talk is a course in ordinary differential equations and a course in multivariable calculus.

L. Pamela Cook(-Ioannidis) received her PhD. in Applied Mathematics from Cornell University. Her thesis was on a singularly perturbed partial differential equation which arose in magnetohydrodynamic pipe flow. She then went to the Netherlands for one year on a N.A.T.O. Postdoctoral fellowship which she held at the University of Utrecht. Subsequently she spent 10 years on the faculty at U.C.L.A. where her primary research interest was transonic aerodynamics, that is flow near the speed of sound. She has been on the faculty of the University of Delaware now for 19 years including 9 years as department chair and 1 year as Associate Dean of Arts and Science. Her research interests at present are in flows of complex (non-Newtonian) fluids. Her specific interest is in understanding and developing mathematical models for the fluids, and in using singular perturbation and asymptotic methods to assist the numerics in solving the coupled nonlinear partial differential equation systems that result. She has had visiting appointments at Cal. Tech. and at the Univ. of Md, College Park. She is presently Editor-in-Chief of the S.I.A.M Journal of Applied Mathematics.

Some Recent Acquisitions in the *On-Line Encyclopedia of Integer Sequences*

Neil J. A. Sloane, AT&T Shannon Labs

What do you make of the sequence 1, 2, 3, 7, 43, 1807, 3263443? It turns out that the terms are sometimes called Euclid numbers and the sequence's next member is 10650056950807. I have been collecting number sequences ever since I was a graduate student at Cornell University in the 1960s. Nearly 6,000 examples are in my 1995 book *The Encyclopedia of Integer Sequences* and many thousands of additional examples are in the online edition of the book. One useful feature of the online compendium is the ability to enter a set of numbers and search for information about that sequence. For example, suppose you enter the numbers 1, 2, 3, 6, 11, 23, 47, 106, 235. Among other things the results page tells you are that the next term is 551, that this sequence is

associated with trees having n nodes, and that there is a formula for calculating the sequence's terms. Over ten thousand new sequences were added to the *On-Line Encyclopedia* in the past year. I will discuss some highlights.

Neil J. A. Sloane grew up in Australia, and did his graduate work at Cornell University. After a brief stint teaching at Cornell, he joined AT&T Bell Laboratories in 1969 and has remained there (at several locations) since. The extremely powerful general-purpose program for constructing experimental designs he developed with R. H. Hardin, *Gosset*, is widely used in industry. His *On-Line Encyclopedia of Integer Sequences* (see <http://www.research.att.com/~njas/sequences/>) receives thousands of visits each day.

He was the MAA's 1984 Earle Raymond Hedrick Lecturer. Honors he has received include the MAA's Chauvenet Prize, medals from the College de France and IEEE's, several IEEE awards for papers he has published, Distinguished Technical Staff Award from Bell Labs, being elected to National Academy of Engineering, and being selected the Shannon Lecturer of IEEE Information Theory Society (the Information Theory Society's highest award).

He is the author of 270 items covering a wide range of topics: coding theory, sphere packing, lattices and quadratic forms, packing lines, planes, etc. (packings in Grassmannian spaces), spherical codes and designs, quantizing, geometry, combinatorics, designs (including experimental designs), integer sequences, group theory, graph theory, spectroscopy, crystallography, and cryptography. In addition to his mathematical interests, he is an avid rock climber and joint author, with Paul Nick, of *Rock Climbing Guide New Jersey*.

Abstracts and Biographies of Workshop Leaders

Group Work in Calculus Workshops - Why and How *Amy Cohen-Corwin, Rutgers University*

How can we get students to understand what it means to understand math? How can we get students to do the kind of work which will pay off best in understanding? Work done by Uri Treisman and Leon Henkin and others at Berkeley in the 1980's suggests that it is crucial to get students to induce students to "talk shop" both inside and outside class. This workshop will briefly review Treisman's analysis and describe ways that his ideas have been implemented in various kinds of institutions. Most of the session will illustrate these ideas by engaging participants in work on a "typical" problem suitable for

either calculus or pre-calculus. It will wrap up with a brief discussion of the challenges of this kind of teaching.

Amy Cohen After receiving her Ph.D. in mathematics from Berkeley, Amy Cohen spent a year at odd jobs, a year at Cornell, and finally settled at Rutgers where she has been since 1972. Despite some time in administration (vice chair twice, a dean once) she prefers teaching and research. Her research interests are in partial differential equations with solitons for solutions. She spends a lot of time trying to make undergraduate education work better for faculty as well as for students.

Fractals and Infinity:
An honors course for general education students
Evan Maletsky, Montclair State University

I will give a description of the content and the many hands-on and computer related activities associated with this unique pairing of two intriguing topics in mathematics.

Evan Maletsky has served for many years as professor of mathematics at Montclair State University. He is an active speaker, author, and past editor with NCTM and an author of numerous mathematics textbook series, professional books, and other publications. Dr. Maletsky received the Distinguished Teaching Award from his university and, in the spring of 2002, he was the recipient of the NJ MAA Distinguished Mathematics Teaching Award.

Announcements

Lunch discussion tables for Fall 03 meeting

There will be 7 discussion tables at lunch.

1. How to make mathematics courses the most valuable educational experience for college students, Edward B. Burger, Williams College
 2. Becoming involved in (departmental/university) administration: pros and cons, L. Pamela Cook, University of Delaware
 3. What the jargon term 'learning communities' can mean in mathematics, Amy Cohen, Rutgers University
 4. Mathematics Courses for the General Education Students (Bring your ideas, old and new, tried and true, for discussion), Evan Maletsky, Montclair University
 5. BIG SIGMA: The BIG Challenge: How/Whether to Keep Publishing, Gregory E. Coxson, Lockheed Martin
 6. POMSIGMA (Philosophy of Mathematics) New Directions in the Philosophy of Mathematics, Bonnie Gold, Monmouth University
- (continued after the schedule)

Mathematical Association of America
New Jersey Section
Fall 2003 Meeting Program
All talks will take place in the ATCC Grand Conference Room C

8:30 – 9:30	Registration and Coffee, Conference Center (ATCC) Atrium and Crescent Lobbies
8:30 – 1:30	Book Exhibits, Conference Center (ATCC) Atrium Lobby
9:30 – 9:45	Welcome by Maxwell McDew Stevens Dean, Academic and Student Services, Raritan Valley Community College
9:45 – 10:30	How to Always Win at Limbo, or, You can sum some of the series some of the time, and some of the series none of the time... but can you sum some of the series ALL of the time? Edward B. Burger , Williams College Presider: Mika Munakata, Montclair State University
10:30 – 11:00	Intermission (Coffee and Book Exhibits)
11:00 – 12:15	<u>Simultaneous workshops:</u> Group Work in Calculus Workshops - Why and How Amy Cohen-Corwin , Rutgers University, ATCC 102 Presider: Revathi Narasimhan, Kean University Fractals and Infinity: An honors course for general education students Evan Maletsky , Montclair State University, ATCC Grand Conference Room C Presider: Helen Roberts, Montclair State University
12:15 – 1:30	Lunch (Book Exhibits end at 1:30) ATCC Grand Conference Rooms A & B
1:30 – 2:15	Flow of Complex Fluids: A Mathematical Introduction L. Pamela Cook , University of Delaware Presider: Max Goldberg, Ramapo College
2:15 – 2:30	Remarks by chair and governor of MAA-NJ, Reginald Luke, Middlesex County College

2:30 – 2:45	Intermission (Silent Auction bidding ends at 2:45)
2:45 – 3:30	Some Recent Acquisitions in the <i>On-Line Encyclopedia of Integer Sequences</i> Neil J. A. Sloane , AT&T Shannon Labs Presider: Su-Chi Wen, Monmouth University
3:30	Drawing of door prizes and announcement of Silent Auction Winners (must be present to win)
5:00	Dinner honoring invited speakers

(Lunch tables, continued)

7. SIGMA-Stat Edu: The Use of Technology in Teaching Statistics, Julio Guillen, NJCU

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 Spring 2004 Meeting

Mark your calendar for the Spring 2004 meeting. It will be held at Rutgers University-New Brunswick, Piscataway, NJ on March 27, 2004. We have a program that you won't want to miss. The list of invited speakers includes John Conway, Princeton University.

Call for contributed papers and lunch table discussion topics for Spring 2004 Meeting

There will be one general contributed paper session and two sessions on special topics for MAA members at the MAA-NJ Spring 2004 Meeting. Topics of the special sessions will be announced at this meeting. Papers for the general session will be accepted on a first-come-first-serve basis. Please submit a title and short abstract by February 1, 2004, to 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 first Garden State Undergraduate Mathematics Conference (GSUMC), which will be held concurrently with its spring meeting on Saturday, March 27, 2004, at Rutgers University, New Brunswick, NJ. Funded by MAA and the New Jersey section, GSUMC seeks to promote undergraduate students in presenting their mathematical work (including math education, applications of math, and history of math) and in interacting with other students. Scheduled activities include student paper/poster sessions, a team problem-solving contest and career-related workshops. More information can be found at www.rowan.edu/mars/depts/math/maa-nj/gsumc.html

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 2004 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 2004 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 recommendation, the awardee will also be the Section candidate for the 2005 MAA Deborah and Franklin Tepper Haimo Awards for Distinguished College or University Teaching of Mathematics. There will be up to three national awardees, each of whom will be honored at the national MAA meeting in January 2005, and receive a certificate and check for \$1,000.

Documents outlining the nomination process are on the 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, Upper Montclair, NJ 07043, korliem@mail.montclair.edu, 973-655-5300. All nomination packets must be received by no later than February 2, 2004.

MAA-NJ Fall 2004 Meeting

The Fall 2004 meeting will be held at the College of New Jersey, Ewing, NJ. Continue checking the Section's web site at <http://maa.org/newjersey> for current information about the Section; the date for the Fall 2004 meeting will be posted there.

MAA-NJ Distinguished Teaching Award –2003

Dr. Stephen J. Greenfield of the Department of Mathematics at Rutgers University-New Brunswick is the recipient of the 2003 MAA-NJ Section Distinguished Teaching Award. The Distinguished Teaching Award was instituted in 1991 to honor college or university teachers who have been widely recognized as extraordinarily successful and whose teaching effectiveness has been shown to have influence beyond their own institutions.

Dr. Greenfield is an inspired and dynamic classroom teacher whose accomplishments go well beyond the classroom. He has successfully served as a mentor to many students, and his influence on individual students has been profound. His impact on the mathematics curriculum of undergraduates and graduate students at Rutgers and elsewhere has been immense. He has meticulously documented his instructional activities on the web, and his pages are considered regularly and extensively by people at Rutgers and elsewhere. He has made major contributions to innovations in the teaching of mathematics and has played a key role in insuring that innovative efforts produced sustained change.

Dr. Greenfield has been vice-chair for both the undergraduate and graduate programs in the Rutgers Mathematics Department, has served as the Department's head undergraduate adviser, and has been a Senior Science Teaching Fellow of the Rutgers Teaching Excellence Center.

Dr. Greenfield educational outreach activities have provided benefits to many students outside Rutgers. He has given lectures to New Jersey high school students at various schools, at the Governor's Summer Academy, and at DIMACS for its young scholars programs. He also works extensively with high school teachers in New Jersey and across the country, and has served as project director at DIMACS summer institutes, which promote interactions between high school teachers and mathematics researchers.

In addition to the MAA-NJ Section Distinguished Teaching Award presented to Dr. Greenfield in Spring 2003, he has received the Rutgers University Minority Advancement Program alumni award for encouraging minority graduate study in mathematics in 1994, The Faculty of Arts and Sciences Award for Distinguished Contribution to Undergraduate Education in 1996, and the Rutgers University Warren L. Sussmann Award for Excellence in Teaching.

Dr. Richard S. Falk, Mathematics Department, Rutgers University-New Brunswick, nominated Dr. Greenfield for this Distinguished Teaching Award.

National MAA-AMS meetings

Joint Mathematics Meeting, January 7-10, 2004, Phoenix, AZ.

MathFest 2004, August 12-14, 2004, Providence, RI.

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

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

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

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

Governor's Report from Mathfest 2003

I had the opportunity to attend my first MAA Board of Governors meeting at MathFest 2003 in Boulder, Colorado, on July 29, 2003, as your newly elected sectional governor representing New Jersey. I currently serve on several boards so procedures and protocols were not unfamiliar, but I was duly impressed by the magnitude and diversity of the MAA organization. Assisting the national executive were over 100 committees dealing with publications, awards, competitions, conference preparations and various projects, such as Project NExT for orienting new mathematics doctorates to teaching and PREP for professional enhancement activities for faculty. Several of our sectional members serve on some of these committees, such as Barbara Osofsky on the AMS-MAA Program Committee for the Phoenix January Meeting 2004. Also our section has two Project NExT Fellows: Marlena Herman at Rowan U and Mika Munakata at Montclair State U.

The financial health of the MAA is very good, as attested by several audits. Revenues have been growing from increased membership and publication sales. A major donation of \$3 million dollars was given to the organization by the Paul Halmos family. Part of this gift will be used to renovate the Carriage House into a conference center at the Washington, D.C. headquarters. New staff members have been hired, for example, to assist in conference logistics. The results for the election of national MAA officers were announced: Carl Cowen – President-Elect, Barbara Faires – First Vice President, and Jean Bee Chan – Second Vice President. We thank our local entry and previous sectional Governor, Amy Cowen, for making a valiant but unsuccessful attempt for a national position. We wish her well in her dedication to the organization. Awards for certificates of meritorious service, as well as the appointments of national lecturers and editors for the MAA journals were all approved. For example, Peter Sarnak of Princeton University was named the 2004 Hedrick Lecturer, and Alan Schoenfeld of UC Berkeley was installed as the Leitzel Lecturer for MathFest 2004. At the 2003 International Mathematics Olympiad in Tokyo, Japan, the USA student team achieved 4 gold medals and 2 silver and placed third after Bulgaria and China. Six recommendations from the Committee in Undergraduate Program of Mathematics (CUPM) were also approved.

At the MAA Business Meeting at MathFest 2003 on August 1st, several new Bylaw changes were adopted by the general membership, including the following: to require governors to have individual rather than just institutional membership; to allow a governor to have proxy representation by a previous governor in case of absence at a Board meeting; to allow the Board to set rates for retired members, similar to what is done for all other constituencies, rather than have this fixed in the Bylaws; to allow for electronic voting rather than printed ballots. In the discussion of this last Bylaw change, Bonnie Gold, MAA-NJ member, initiated an amendment that preserved the write-in candidate space on the electronic ballot, which was successively adopted.

The NJ Section was actively represented at the MathFest 2003 Contributed or Invited Paper Sessions by presentations (titles in italics) from following sectional members: Bonnie Gold (Monmouth University), *Directed Discussion in the Philosophy of Mathematics*; Brian Hopkins (St. Peter's College), *Internet Tools for Modern Algebra*; Patricia Kenschaft (Montclair State University) *How Much is a Billion?*; Richard Kuntz (Monmouth University), *A Web-based Practice and Testing System*; Javid Namazi (Fairleigh Dickinson University), *A Problem on Optimizing of Composite Membranes*; Revathi Narasimhan (Kean University), *Creating Interactive Spreadsheet Modules for Precalculus and Beyond*. Making the trek from NJ to the CO mountains and giving student presentations for MAA and Pi Mu Epsilon were: Vincent Berardi (St. Peter's College – NJ Epsilon), *Chaos*; James Jessup (Seton Hall University – NJ Delta), *The Isometric Inequality*; and Derek Pop (Seton Hall University – NJ Delta), *Bifurcations of the Henon Map*.
Reginald Luke, Middlesex County College

News from NJ departments

The Mathematics Department at Monmouth University welcomes our newest faculty member, Dr. David Sze, whose interests include stochastic modeling and the creative use of internet capabilities for statistics and mathematics education.

The Department of Mathematical Sciences at Montclair State University is pleased to welcome Baojun Song, our new faculty member, in the Department. His research interests include mathematical biology and mathematical epidemiology.

The Mathematics CONvening Group at Ramapo College of New Jersey welcomes its newest faculty member, Maxim Goldberg. His area of research is applied mathematics."

The Math Department at Rowan University welcomes its newest faculty member, Dr. Karen Heinz. Her area of research is math education.

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

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Acknowledgments The MAA-NJ thanks the Mathematics Department of Raritan Valley Community College, for their kind hospitality in hosting the meeting.