

Hosting Committee: Mark Korlie, Aihua Li, Haiyan Su, Soo Jin Lee, William Parzynski, Montclair State University

Awards Committee: Siham Alfred, Raritan Valley Community College; Larry D'Antonio, Ramapo College; Mark Korlie (chair), Montclair State University; New Elizabeth Uptegrove, Felician College

Nomination Committee: Mark Korlie, Montclair State University; Hieu D. Nguyen, (chair) Rowan University; Tatyana Stepanova, Raritan Valley Community College; David Marshall, Monmouth University

Teaching Award Committee: Bruce Bukiet, NJIT; Bonnie Gold (chair), Monmouth University; Robert Wilson, Rutgers University; Kenneth Wolff, Montclair State University; Tom Osler, Rowan University

Selection Committee for Contributed Papers: Larry D'Antonio (chair), Ramapo College; Yi Ding, New Jersey City University; Olcay Ilicasu, Rowan University; Chengwen Wang, Essex County College; Theresa Michnowicz (ex-officio), New Jersey City University

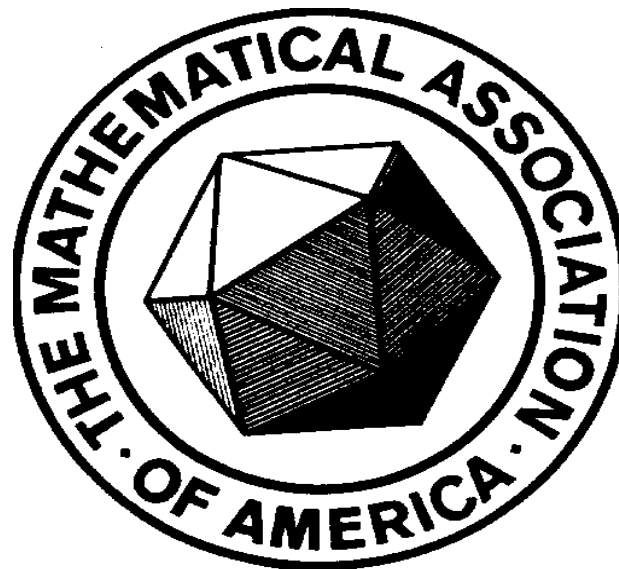
The New Jersey Section thanks Theresa Michnowicz of NJCU for her long service on the Awards Committee and the Nominating Committee, Janet Caldwell of Rowan University for her long service on the Teaching Award Committee, and Carol Avelsgaard, retired from Middlesex County College, for her long service on the contributed Paper Selection Committee.

Acknowledgments

The New Jersey Section thanks the Department of Mathematical Sciences at Montclair State University for their kind hospitality in hosting this meeting. It also thanks Cengage, Taylor & Francis, Princeton University Press, and Springer for donating books for the silent auction and door prizes.

The Mathematical Association of America

Meeting of the New Jersey Section



**Montclair State University
Montclair, NJ**

Saturday, October 29, 2011

Abstracts and Biographies of Speakers

Mathematics of Losing Weight: Translating Mathematical Modeling to a Patient's Bedside.

Diana Thomas, Montclair State University

ABSTRACT: What is a safe, achievable and clinically meaningful goal for weekly weight loss? This question is asked by both health care professionals and individuals seeking guidance on losing excess weight. The answer to this question relies on carefully collected data and accurate mathematical model construction. Advances in weight loss monitoring technology, clinical measurements, and computers have led to an explosion of improved mathematical weight loss prediction models. In this presentation I will review mathematical models of human body weight regulation, the extraordinary experimental studies that were instrumental to model development, and the novel interdisciplinary methods that bring model utility to the patient's bedside. The mathematician's role in this translational effort requires blurring departmental and disciplinary boundaries. This effort induces unexpected shifts in how a mathematician conducts undergraduate research, prepares publications, delivers presentations, and considers funding. I will outline some of these interesting changes and their impact on a mathematician's career.

Diana Thomas is an Associate Professor of Mathematics at Montclair State University in New Jersey. For the past ten years, she has developed various mathematical models applied to biology and her research has appeared in journals such as *Journal of Mathematical Biology*, *Mathematical Biosciences*, *Linear Algebra and its Applications*, and the *American Journal of Clinical Nutrition*. She has been an active supporter of undergraduate research in mathematics and served as a councilor for the Council of Undergraduate Research. She was the director of the MAA Undergraduate Research Poster Session from 2005-2010, and has served on the MAA Committee on Undergraduate Student Activities and Chapters. Her current research interest is in mathematical applications, such as studying obesity.

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Committees

Organizing Committee Carol Avelsgaard, Middlesex County College; Zhixiong Chen, New Jersey City University; Karen Clark, The College of New Jersey; Larry D'Antonio, Ramapo College; Srabasti Dutta, SUNY at Stony Brook; Kaaren Finberg, Ocean County College; Bonnie Gold, Monmouth University; Thomas Hagedorn, The College of New Jersey; Mark S. Korlie, Montclair State University; Aihua Li, Montclair State University; David Marshall, Monmouth University; Theresa C. Michnowicz, New Jersey City University; John Saccoman, Seton Hall University; Beimnet Teclezghi, New Jersey City University; Dirck Uptegrove, Lucent Technologies; Elizabeth Uptegrove, Felican College; Paul VonDohlen, William Paterson University; Chengwen Wang, Essex County College.

John Kenelly, the Treasurer of the MAA, reported that the MAA is financially sound, but there have been recent repeated operating deficits. The MAA is working hard to eliminate these deficits. Its Budget Committee presented a balanced budget proposal for 2012. In the spirit of balancing the budget, the 2012 budget will reduce the travel stipend for Governors from \$600 to \$500 per meeting. Section representative travel stipend will no longer be available. It has been eliminated. It was suggested that perhaps Sections with surpluses can use their saving to fund travel stipends for sections representatives at the national meetings.

The Board elected Jim Daniel of the University of Texas at Austin to succeed John Kenelly as treasurer of the MAA. His term was scheduled to begin on February 1, 2012, but John Kenelly resigned as treasurer of the MAA on August 29, 2011. John Kenelly had originally planned to step aside after completing 10 years (two terms) as treasurer of the MAA in January 2012. His resignation was accepted with regret and deep appreciation for his many years of service to the MAA. The MAA Executive Committee voted on September 6, 2011 to appoint Jim Daniel as treasurer effective immediately. He will complete John Kenelly's second term and begin a five-year term as treasurer of the MAA on February 1, 2012.

Tina Straley, the MAA Executive Director, reported that the MAA has experienced annual operating budget deficits from 2007 to 2010, and another deficit is predicted for 2011 operating budget. To overcome these deficits, cuts have been made throughout the budget including cuts to staff size, and travels and meals for the Board of Governors and other governance meetings.

Steve Dunbar reported that the USA team placed second in the 52nd International Mathematical Olympiad (IMO) with all six members of the team receiving gold medals. The 52nd IMO competition was held in Amsterdam, the Netherlands on July 16-24, 2011. China placed first.

The Board elected Amy Cohen of Rutgers University as the Chair of the Council on the Profession. The charge of the Council on the Profession include advising the MAA on issues involving mathematicians in the teaching, research, service activities, and professional responsibilities of mathematics departments within their institutions.

With funding from the National Science Foundation-Division of Undergraduate Education, the MAA has started hosting the WeBWork online homework system for math courses. The fee is \$200 per course for MAA Department Members, and for non-departmental members, the fee is \$300. It may be possible for a course to be hosted on a trial basis. For more information, please go to the website <http://webwork.maa.org/>.

For more information about the MAA, please go to the <http://maa.org/> and <http://maa.org/newjersey>.

Effective Strategies that Undergraduates Can Use to Read Justifications and Proofs

Keith Weber, Rutgers University

ABSTRACT: In mathematics lectures, it is common for the professor to present a justification for a mathematical procedure or a proof of a mathematical theorem. However, research suggests that many students gain little from reading or observing these justifications and proofs. This talk will focus on (a) what we hope students obtain from studying a justification or proof and (b) what strategies students should use when reading a justification or proof to maximize their learning gains.

Topics for this research include derivations of the quadratic formula, the proof of the Fundamental Theorem of Calculus, and topics from the upper-level undergraduate curriculum.

Keith Weber is an Associate Professor of Mathematics Education at Rutgers University. He was awarded the Early Career Publication Award in mathematics education from the American Education Research Association (AERA) in 2006, the Early Career Publication Award by the NSF in 2007, the Selden Prize for outstanding research in undergraduate mathematics education by the MAA in 2010, and the Best Paper Award at the 12th and 13th Conference for Research in Undergraduate Mathematics Education in 2009 and 2010. His research focuses on the construction and comprehension of mathematical proof at the advanced undergraduate level.

Math and Art: The Good, the Bad, and the Pretty

Annalisa Crannell, Franklin & Marshall College

ABSTRACT: How do we fit a three-dimensional world onto a two-dimensional canvas? Answering this question will literally change the way you look at the world. We'll learn where to stand as we view a painting so it pops off that two-dimensional canvas seemingly out into our three-dimensional space. In this talk, we'll explore the mathematics behind perspective paintings, which starts with simple rules and will lead us into really lovely, really tricky puzzles. Why do artists use vanishing points? What's the difference between 1-point and 3-point perspective? Why do your vacation pictures don't look as good as the mountains you photographed? Dust off those old similar triangles, and get ready to put them to new use in looking at art!

Annalisa Crannell is a Professor of Mathematics at Franklin & Marshall College and recipient of the MAA's 2008 Deborah and Franklin Tepper Haimo Award for distinguished teaching. Her primary research has been

in topological dynamical systems (also known as "Chaos Theory"), but she is becoming active in developing materials on Projective Geometry applied to Perspective Art. She has worked extensively with students and other teachers on writing in mathematics, and with recent doctorates on employment in mathematics. She especially enjoys talking to non-mathematicians who haven't (yet) learned where the most beautiful aspects of the subject lie.

Workshop Information

Your Name in Space!

Annalisa Crannell, Franklin & Marshall College

ABSTRACT: Why leave those letters in your name flat and lifeless, when you can give them 3-d depth and fullness? Come get your new-and-improved math/art today, and you can draw your name in 3-d letters, using some quick-and-easy tricks from 1-point perspective drawing! Offer available while art supplies last.

Assessing Students' Understanding of Mathematical Proofs

Evan Fuller, Montclair State University; Keith Weber, and Juan Pablo Mejia-Ramos, Rutgers University

ABSTRACT: We will discuss a novel way of assessing students' understanding of proofs that they read or hear presented. Our method of assessment provides useful information that is missed by the traditional means of assessment: asking students to produce (or reproduce) proofs. Specifically, we have developed seven categories of comprehension, with template questions to assess comprehension in each category. We will motivate and illustrate these categories using example proofs and comprehension questions. Attendees will participate actively by identifying aspects of proof that are assessed by different questions.

Evan Fuller is an Assistant Professor of Mathematics Education at Montclair State University. He earned his Ph.D. in Combinatorics at the University of California, San Diego, with dual training in mathematics and mathematics education. Fuller's research focuses on the teaching and learning of proof at the undergraduate level, and he is a Co-PI on an NSF grant to study different ways in which math majors approach proving tasks.

Juan Pablo Mejia-Ramos is an Assistant Professor of Mathematics Education at Rutgers University, where he is jointly appointed in the Department of Learning and Teaching (Graduate School of Education) and

Governor's Report

Mark Korlie, Montclair State University

The MAA Board of Governors had a lively meeting at MathFest 2011 in Lexington, Kentucky on August 3, 2011. The Board heard reports from the Washington Office, national MAA officers, strategic planning working groups, and editors of MAA publications. In addition, the Board approved recommendations for prizes and awards, voted to elect various officers including chairs of committees and councils, and had discussions on many issues concerning the MAA. Some of the reports presented at this meeting and decisions made by the Board are as follows.

Bob Devaney of Boston University was elected the next president of the MAA. Beginning February 1, 2012, he will serve as president-elect for one year and then as president for two years. Lloyd Douglas of the University of North Carolina at Greensboro was elected first vice president, and Jenny Quinn of the University of Washington at Tacoma was elected second vice president. Paul Zorn's term as president of the MAA will end in January 2013.

This was Tina Straley's last MathFest as Executive Director of the MAA. She is retiring effective December 31, 2011 after completing 12 years as Executive Director. She and her leadership of the MAA will be celebrated at the Joint Mathematics Meetings in Boston in January 2012. The Board gave her a joyous standing ovation with long applause.

The Board voted Michael Pearson Executive Director of the MAA. He is the current Associate Executive Director of the MAA, and his term as Executive Director will begin on January 1, 2012.

MathFest 2012 will be held in Madison, Wisconsin on August 2-4. The invited speakers include Bernd Sturmfels of the University of California at Berkeley who will give the three Hedrick Lectures, Robert Ghrist of the University of Pennsylvania, Rick Kenyon of Brown University, and Amie Wilkinson of Northwestern University.

The invited MAA speakers at the Joint Mathematics Meeting in Boston on January 4-7, 2012 include Mary Lou Zeeman of Bowdoin College, Rekha Thomas of the University of Washington, Seth Sullivant of North Carolina State University, Jennifer Quinn of the University of Washington at Tacoma, and Carolyn Gordon of Dartmouth College. Erik Demaine of MIT will give the third Porter Public Lecture.

Student Oral presentations: There will be parallel student oral presentation sessions. Student presentations on undergraduate mathematics research projects are welcome from all universities and colleges. There is no limit on the number of oral presentations at **GSUMC 2012** from each school. Student presenters must register in advance. Registration information will be given later. All abstracts of student talks will be evaluated by a selection committee. Accepted talks will be given 15 minutes to present at the conference. For further information, contact Dr. Chengwen Wang (wang@essex.edu).

Student Poster session: There will be an open student poster session. Sign-ups will occur at the time of advance registration. It is expected there will be prizes for the top posters. For further information contact Dr. David Trubatch (trubatchd@mail.montclair.edu).

Joint Mathematics Meetings 2012

The 2012 Joint Meetings of the AMS and MAA will take place in Boston, MA, January 4-7. More information about the meetings can be found online at http://www.amsmtgs/2010_intro.html.

MathFest 2012

The Mathematical Association of America will hold its annual MathFest in Madison, WI, August 2-7. Check MAA Online at <http://www.maa.org> for more information about MathFest.

Other Future National MAA Meetings

- 2013 Joint Mathematics Meeting, San Diego, CA, January 9-12.
- 2013 MathFest, Hartford, CT, August 1-3.

Dinner Honoring the Invited Speakers

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

Why I Joined the MAA

If you would be willing to have your 2-3 paragraph statement, "Why I Joined the MAA," be posted on the MAA website, contact Bob Anastasio, Director of Marketing and Management, ranastasio@maa.org.

JOIN THE MAA: http://www.maa.org/subpage_1.html

the Department of Mathematics (School of Arts and Sciences). He earned his bachelor's degree in mathematics from the Universidad de Los Andes (Bogotá, Colombia) and his master's and doctoral degrees in mathematics education from the University of Warwick (U.K.) His research focuses on the construction, reading and presentation of mathematical proofs in university mathematics.

Lunch Discussion Tables

Organized by Theresa C. Michnowicz, New Jersey City University. There will be 5 discussion tables at lunch:

1. *The Cost of Text Books*, led by Carol Avelsgaard, Middlesex College,
2. *The First Day of Class*, led by Annalisa Crannell, Franklin and Marshall College.
3. *Transitions from Live to Online Teaching*, led by Eileen Fernandez, Montclair State University.
4. *Teaching and Learning of Proof*, led by Evan Fuller, Montclair State University
5. *Regulating Body Weight through Diet and Exercise*, led by Diana Thomas, Montclair State University

Attendees who pre-registered have priority at these discussion tables. We look forward to a set of lively and interesting discussions!

Book Sales at the Meeting

The discount meeting price of MAA books also applies to books not currently on display. Further, when you order such books at the meeting no shipping cost will be charged.

Call for Nominations for the MAA_NJ Award for College or University Teaching

The MAA-NJ Section Distinguished Teacher Award Selection Committee is seeking nominations for the 2012 Award. There are many excellent teachers in our section. Please be sure to nominate one. Information about the simplified nomination process and eligibility requirements are posted at <http://www.maa.org/newjersey>. Please send your nomination to Zhixiong Chen electronically at zchen@njcu.edu by **Nov 7, 2011**.

(Continued on page 9, after the schedule)

Mathematical Association of America New Jersey Section Fall 2011 Meeting Program

All talks and workshops will be held in Richardson Hall

8:30 – 9:30	Registration and Coffee , Lobby in front of Richardson Hall 120
8:30 – 1:30	Book Exhibits , Lobby in front of Richardson Hall 120
9:30 – 9:40	Welcome Address. By Dr. Kenneth C. Wolff, Department of Mathematical Sciences, Montclair State University <i>Richardson Hall 120</i>
9:40 – 10:30	Translating Mathematical Modeling to a Patient's Bedside , Diana Thomas, Montclair State University Presider: Dirck Uptegrove, Lucent Technologies <i>Richardson Hall 120</i>
10:30 – 11:10	Intermission , (Coffee and Book Exhibits),
11:10 – 12:00	Effective Strategies that Undergraduates Can Use to Read Justifications and Proofs , Keith Weber, Rutgers University Presider: Chengwen Wang, Essex County College <i>Richardson Hall 120</i>
12:00 – 1:15	Lunch , Sam Mills Hall (Book exhibits end at 2:00.)
1:30 – 2:45	Workshops <ul style="list-style-type: none"> • Your Name in Space! Annalisa Crannell, Franklin & Marshall College. <i>Richardson Hall 106</i> • Assessing Students' Understanding of Mathematical Proofs. Evan Fuller, Montclair State University; Keith Weber, and Juan Pablo Mejia-Ramos, Rutgers University. <i>Richardson Hall 114</i> • NJ- Next Workshop. <i>Richardson Hall 118</i>
2:45 – 3:15	Intermission and Refreshments , (Silent auction bidding ends at 3:15)
3:15 – 3:30	Business Meeting , <i>Richardson Hall 120</i>
3:30 – 4:20	Math and Art: The Good, the Bad, and the Pretty Annalisa Crannell, Franklin & Marshall College Presider: Sarita Nemani, Georgian Court University <i>Richardson Hall 120</i>
4:20 - 5:00	Prizes: Drawing of door prizes and announcement of silent auction winners (must be present to win)
5:00	Dinner

Future MAA-NJ Meetings

The spring 2012 MAA-NJ Section meeting will be held in conjunction with the ninth annual Garden State Undergraduate Mathematics Conference, at Raritan Valley County College on Saturday, March 31. The speakers for this event include: Francis Su, Harvey Mudd College and First Vice-President of the MAA, joint MAA-NJ/GSUMC speaker; Joseph O'Rourke, Smith College

Call for Contributed Papers and Lunch Table Discussion Topics for the Spring 2012 MAA-NJ Meeting

There will be one general contributed paper session and three special sessions. All papers will be reviewed by the organizers and the selection committee. Please submit title, 3-4 line summary, and 1 page abstract in **WORD** by **February 2, 2012** to the organizer of the session.

- *Math, Statistics, and the Data Deluge* (2012 Math Awareness Topic). Organizer: Dexter C. Whittinghill, Rowan University, whittinghill@rowan.edu
- *Contributed Papers by Graduate Students.* Organized by Sarita Nemani, Georgian Court University, nemanis@georgian.edu
- *Innovation in Teaching Undergraduate Mathematics.* Organizer Bonnie Gold, Monmouth University, bgold@monmouth.edu
- *General Contributed Paper Session.* Organizer: Larry D'Antonio, Ramapo University, ldant@ramapo.edu

MAA members interested in leading a Lunch Table Discussion at the Spring 2012 meeting are asked to submit their proposals to Theresa C. Michnowicz, New Jersey City University, tmichnowicz@njcu.edu, by **February 2, 2012**

Call for papers at the Spring 2012 meeting of the New Jersey Association of Mathematics Teacher Educators (NJAMTE). If you are doing research, or something innovative, in the education of preservice or inservice mathematics teachers (at any level, K-12 that you would like to share), you are invited to submit an abstract for a presentation (15 minute presentation/15 minute discussion) at NJAMTE's annual meeting on Friday, May 18, 2012 at The College of New Jersey. Please send a one-page abstract describing what you propose to speak on to Dr. John Hammett, III, at NJAMTE@gmail.com. Deadline for submissions is February 15, 2012.

GSUMC 2012 Mark your calendars and bring your students! The Ninth Annual Garden State Undergraduate Mathematics Conference (known as GSUMC) will be held on Saturday, March 31, 2012 at Raritan Valley Community College. Over 140 students and 30 schools participated in last year's conference. GSUMC 2012 will have a team mathematics competition, a student poster session, student talks, and a keynote speech. For more information, contact Srabasti Dutta (srabastidutta@gmail.com) or Aihua Li (lia@mail.montclair.edu).