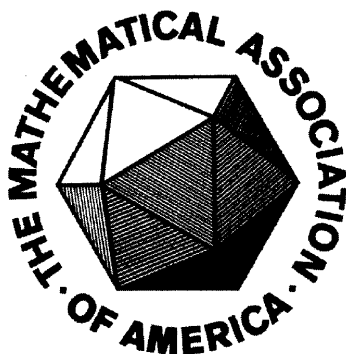


# **NORTHEASTERN SECTION**



## **NEWSLETTER**

**Fall 2013**

**Volume 35**

**Number 2**

**Web Page:**

**<http://www.maa.org/northeastern>**

**Webmaster:**

**Rob Poodiack, Norwich University**

## EXECUTIVE COMMITTEE

### CHAIR

**Eric Johnson**

Department of Mathematics  
US Coast Guard Academy  
New London, Ct 06320  
(860) 444-8671  
Eric.c.Johnson@uscga.edu

### GOVERNOR

**Tommy Ratliff**

Department of Mathematics/CS  
Wheaton College  
Norton, MA 02766  
(508) 286-3968  
tratliff@wheatoncollege.edu

### PAST CHAIR

**Karen Stanish**

Department of Mathematics  
Keene State College  
Keene, NH 03435  
(603) 358-2587  
kstanish@keene.edu

### SECRETARY-TREASURER

**Ann Kizanis**

Mathematics Department  
Western New England College  
Springfield, MA 01119  
(413)782-1784  
akizanis@wne.edu

### TWO-YEAR COLLEGE REP.

**Philip Mahler**

Mathematics Department  
Middlesex Community College  
591 Springs Road  
Bedford, MA 01730  
(781)280-3861  
mahlerp@middlesex.mass.edu

### NEWSLETTER EDITOR

**Frank Ford**

Department of Mathematics/CS  
Providence College  
One Cunningham Square  
(401)865-2334  
fpford@providnece.edu

### WEBMASTER

**Rob Poodiack**

Department of Mathematics  
Norwich University  
Northfield, VT 05663  
(802) 485-2339  
rpoodiac@norwich.edu

## UPCOMING SECTION MEETING

May 30 and May 31, 2014

Spring Section Meeting

Johnson State College, Johnson, VT

Local Arrangements: Julie Theoret, Johnson State College

## FUTURE SECTION MEETINGS

November 21 and 22, 2014

Fall Section Meeting

Southern Connecticut State University, New Haven, CT.

## OTHER ACTIVITIES

May 30, 2014

Section NExT Meeting

Johnson State College, Johnson, VT

## Other Officers

### Contributed Papers Coordinator

**Shannon Lockard**

Department of Mathematics

Bridgewater State University

Bridgewater, MA 02325

(508) 531-2830

stockard@bridgew.edu

### Undergraduate Student Papers

**Coordinator**

**Raimondo Kovac**

Mathematics and Computer Science

Department

Rhode Island College

Providence, RI 02908

(401) 456-9753

rkovac@ric.edu

### Graduate Student Papers

**Coordinator**

**Sarah Mabrouk**

Department of Mathematics

Framingham State University

Framingham, MA 01701-9101

(508) 626-4785

smabrouk@framingham.edu

### New Colleagues Papers

**Coordinator**

**Lynette Boos**

Department of Mathematics and

Computer Science

Providence College

Providence, RI 02918

(401) 865-2630

lboos@providence.edu

**Section NExT Coordinator****Jason Moliterno**

Mathematics Department

Sacred Heart University

Fairfield, CT 06825-1000

(203) 371-7775

**moliternoj@sacredheart.edu****Student Problem Solving****Coordinator****Jennifer Berg**

Mathematics Department

Fitchburg State University

Fitchburg, MA 01420-2697

(978) 665-3787

**jberg5@fitchburgstate.edu****Activity Grants Coordinator**

Karl-Dieter Crisman

Department of Mathematics/CS

Gordon College

Wenham, MA 01984

karl.crisman@gordon.edu

**Dinner Meetings Coordinator****Lucy Kimball**

Department of Mathematical

Sciences

Bentley University

Waltham, MA 02452

(781) 891-2467

**lkimball@bentley.edu****Collegiate Mathematics****Competition Coordinator****Vince Ferlini**

Department of Mathematics

Keene State College

Keene, NH 03435-2001

(603) 358-2575

vferlini@keene.edu

## **Message from the Chair.....Karen Stanish**

We enjoyed an excellent Spring Meeting at Western Connecticut State University on May 31-June 1, 2013. Thank you to Becky Hall and Barry Mittag, from WCSU, and their program committee for putting together such an engaging program and to David Burns and the entire local arrangements committee at WCSU for hosting such an enjoyable meeting.

Many of us attended MathFest in Hartford this summer from July 31-August 3, 2013. Attending talks given by dynamic speakers from our section and beyond, enjoying the “Taste of Hartford,” and connecting with friends old and new were among the highlights of the meeting for me.

Next I am looking forward to our Fall Meeting on November 22-23, 2013 at Wheaton College in Wheaton, MA. Highlights of the program include: includes the Christie Lecture given by Hans Kaper of the Mathematics and Climate Research Network, and invited talks by Jennifer Quinn of the University of Washington Tacoma and Second Vice President of the MAA, Meredith Greer of Bates College, and Catherine Roberts of the College of the Holy Cross. In addition, the Section NExT session for untenured faculty will feature a talk by Jenny Quinn, as well as conversation over lunch. The student problem solving competition, student, presentations and contributed paper sessions will round out wonderful weekend of mathematics.

The Section would like to continue its Activity Grants Program to assist in funding activities in the Section. If you have plans for a speaker but cannot find all the money you need or have another idea for an activity that the Section could help fund, just send me an email to the new Activity Grants Program Coordinator, Karl-Dieter Crisman, at [karl.crisman@gordon.edu](mailto:karl.crisman@gordon.edu). Thank you to Karl-Dieter for taking on this role.

As this is my last column as chair, I want to thank all of the folks who helped me run the section over the past two years. I would like to thank all of the members of the Executive Committee for their hard work, input on ideas, and advice. Special thanks go to Rob Poodiack, as past chair and webmaster, for answering all of my questions, reminding me of all that I forgot to do, and for handling all of the website operations so smoothly, and to Ockle Johnson for being my counsel down the hall. I know you all join me in welcoming Eric Johnson as the new Section Chair. I am happy to know that the Section will be in such good hands.

I hope you all are enjoying a productive semester and will make time to join us at Wheaton College on November 22-23, 2013 and at Johnson State College on May

30-31, 2014. Don't forget to mark your calendars for the Joint Mathematics Meetings in Baltimore, MD on January 15-18, 2014 and MathFest 2014 that will be held in Portland, OR on August 7-9, 2014.

## **Message from the Governor..... Tommy Ratliff**

Since I wrote in the Spring, there has been a definite Northeastern Section feel to the national MAA. A very successful MathFest was held in Hartford, Connecticut, in August where our very own Bob Devaney of Boston University chaired his first Board of Governors meeting as President of the MAA. In addition, Bob has begun serving on the Executive Committee of Conference Board of the Mathematical Sciences.

The changes to the individual memberships that I outlined in my spring report have now been implemented. If you have not yet seen the greatly simplified structure, you will see it in your next renewal notice. The major advantage is that every member will now have electronic access to all MAA journals through the redesigned and improved MAA website. The other substantial change is that a subscription to the print version of a journal is no longer included with membership. However, the membership fee has been adjusted so that you should not see a significant difference in cost if you choose to subscribe to a print journal.

A large part of the Board of Governors meeting at MathFest was centered on Departmental memberships, and this discussion is ongoing. If you have any thoughts or suggestions about improving Departmental memberships, please pass them along to me. The MAA can add value to your departmental programs in many different ways, and it is important to get input from as many different voices as possible.

It is good for the MAA to review the membership structure periodically, but this is particularly important in the current context of the national MAA's deficit budgets. All professional societies are facing increased pressures due to declining membership, and everyone understands that continued deficits for the MAA are not sustainable. We should begin to see some improvement in the MAA's finances based on recent initiatives, including the website redesign and a move to a print on demand system for MAA books to reduce inventory costs by producing smaller batches. We will receive an update at the Joint Meetings in January on the impact of these approaches.

On personal note, I really enjoyed seeing those of you who were able to come to the Fall Section meeting that we hosted at Wheaton in November. If you are a regular attendee at our Section meeting, then you know how much fun they are, and if you

have not attended one recently, I would really encourage you to do so. In any case, I hope to see you at the Joint Meetings in Baltimore in January!

### **Message from the Secretary-Treasurer ..... Ann Kizanis**

In the spring newsletter, I reported a balance of \$21,608.43. Since that time, the expenses from the successful spring meeting at Western Connecticut State University were \$4,783.88. The revenue from meeting registrations was \$3,249.17. The expenses for the printing and postage of the spring newsletter totaled \$766.90. Moreover, we earned \$40.61 in interest from money placed into an 18 month CD and received \$37.81 from the spring MAA Book sale. We also received our subvention check in the amount of \$2,711.00 from the national office this fall. Our present balance is \$22,096.24.

The expenses for our spring 2013 meeting were \$6,196.72 less than the total fall 2012 meeting expenses, and the revenue from spring meeting registrations was \$5,337.79 less than the revenue from fall meeting registrations. The expenses for the postage and printing of our newsletter last spring decreased from last fall. We spent \$1,233.46 for the printing and postage of the fall 2012 newsletter and \$766.90 for the printing and postage of the spring 2013 newsletter.

In the spring, I wrote and submitted the yearly Financial Report of the Northeastern Section of the MAA. I also wrote our section's Annual Report at the beginning of the summer.

That is my update for now! We are all looking forward to the Fall MAA meeting at Wheaton College on November 22 – 23, where I will update you further on our finances.

I wish you all a very enjoyable fall semester!

### **Two-year College Representative's Report..... Phil Mahler**

In Massachusetts STEM degrees are getting renewed attention at the Department of Higher Education. Also being looked at are changes in the statewide placement test and earlier placement of "developmental" students into college level courses, especially in non-STEM "metamajors". Envisioned among other things are support courses for the college level course, to be taken at the same time. AMATYC's New Life initiative and the Carnegie Foundation for the Advancement of Teaching's Statway programs are notable examples. NEMATYC's spring meeting will be at Middlesex Community College April 4-5 in Lowell MA.

Rachael Schettenhelm of MATYCONN reports that MATYCONN's spring meeting is April 26 at Three Rivers Community College in Norwich CT. With the passing of

CT Public Act 12-40, community colleges in Connecticut are working quickly to meet the Fall 2014 implementation deadline. Pilot initiatives have begun to ensure compliance with the bill's key directives: multiple measures used for placement in initial courses, a limit of one semester of intensive remediation, embedded support in the primary college-level courses, and alignment with the high schools who will be implementing the Common Core and its accompanying assessments.

## **From the Newsletter Editor.....Frank Ford**

I write in December after the Fall meeting which is not the usual time to go to press but since the “Lite” version of the newsletter is now the notice for our meeting, this “heavy” version is for officers’ messages, section news and a record of our activities. In particular, the titles and presenter names for new colleagues, student paper and contributed paper sessions are included in here for the record. I’ve listed below the speakers for the Fall 2012 and Spring 2013 meetings.

Since the Spring newsletter, we had two meetings in Connecticut and both were excellent. I enjoyed the Section meeting at Western Connecticut and the MathFest in Hartford. One outstanding feature of the Hartford meeting was the free bus that traveled between the hotels and the convention center. Other cities ought to do the same. The bus made getting around effortless.

The Fall meeting at Wheaton was very well run by Tommy Ratliff and the Program Committee did a great job. It was nice to have the first Section meeting of a Sigma added to the meeting. POM did a good job and they inspired me to read Borges’ work when I get the time.

Early in the Spring semester, I will be calling on you to send information from your colleges for the “From the Colleges” section which will return in the Spring newsletter. Gather your news now- hirings, promotions, tenure decisions, visiting faculty, awards, new courses, student achievements, births, deaths,....

Next up is the Joint Meetings in Baltimore. I hope I’ll see many of you there.

## **Student Presentations at the Spring 2013 Meeting**

**Steven Goliber, Western Connecticut State University**

The Rationality of Getting Vaccinated

**Noel Rodrigues, Western Connecticut State University**

The Socioeconomic Effect on Mathematical Achievement



**Vincent Bradley, Keene State College**  
Perfect Parallelograms

**Matthew Caputo, Keene State College**  
Inscribed Circles and Spheres

## **Contributed Papers Presented at the Spring 2013 Meeting**

**Teaching Statistical Inference in Introductory Statistics Using Excel Simulation**

Leslie Chandrakantha, John Jay College of Criminal Justice/CUNY

**Elemental Graphics for Analysis of Variance Using the R Package Granova**

James E Helmreich, Marist College and

Robert M. Pruzek, University at Albany

**Multimedia Applets for Applied Statistics**

Jacob A. Gagnon, Worcester Polytechnic Institute

**Using the Quaternions to do Spherical Geometry**

Marshall Whittlesey, Cal State San Marcos

**Modeling Passive Transport in Meso-scale Oceanic Turbulence**

Banu Baydil, The University of Maine

## **Student Presentations at the Fall 2012 Meeting**

**Zane K. Martin, Williams College**

Perimeter-minimizing Planar Tilings by Pentagons

**Jessica Fathergill and Jenna Collins, Westfield State University**

Fast Fourier Transforms and Digital Hearing

**Trevor Perreault and Jessica Fathergill, Westfield State University**  
Observing the Relationship between State and National Exams

**Walter J Malec III, Westfield State University**  
Fractal Dimensions

**Walter J Malec III, Westfield State University**  
A famous Series, Fourier Analysis, and Riemann's Zeta Function

**Brittanie McGregor, Westfield State University**  
Eric Carle Teaches Mathematics

**Irina Znakharchuk and Erik Rakus, Westfield State University**  
The 4<sup>th</sup> Dimension and Beyond

**Ursula Galecki, Westfield State University**  
Are You Happy? The level of Happiness in Massachusetts

**Brittany Boscarino, Keene State College**  
Mastering an Angle with a Ruler

**Rebecca Brady, Keene State University**  
A Rectangular Occurrence of Pi

**Matheus Leis, University of Massachusetts, Dartmouth**  
The Power of Social Networking

**Andrew Davey, University of Massachusetts Dartmouth**  
Successive Constraint Method in the Collocation Reduced Basis Framework

**Emmalene McHugh, Carlina Santana and Vanessa Haen, University of Massachusetts Dartmouth**  
Heritage Health Prize

**Tyler Spilhaus, University of Massachusetts Dartmouth**  
Analyzing Low Resolution Images

**Keith Resendes, University of Massachusetts Dartmouth**  
Investigating Logistic Regression

**Melissa Haire, Gordon College**  
The Complement of Fermat Curves in the Plane

**Ben Sebuufu, Gordon College**  
Two-Player Sowing Games

**Michael Fenech, Sacred Heart University**  
The Laplace Transform

**Suzanne May, Sacred Heart University**  
Time Series Analysis and Forecasting with an Application

**Anita Kadlof, Sacred Heart University**  
Black-Scholes-Merton Model and Option Pricing

**Richard Hennigan, Salem State University**  
Simplifying Point Clouds Sampled from Smooth Surfaces

**Joshua Bernard, Bridgewater State University**  
Pareto-Efficient Trade with Many Participants and Goods: Edgeworth Boxes in Higher Dimensions

**Judith Marin, Bridgewater State University**  
Harvesting Human kinetic Energy

**James Marcotte, Bridgewater State University**  
Laxodromic Spirals and M. C. Escher's Sphere Surface

**Matthew Gagne, Bridgewater State University**  
Diagonals in the Calkin-Wilf Tree

**Brendon O'Brien, Westfield State University**  
Determining Impacts of Major Rule Changes in Scoring of NBA Players

**Nicholas Craven and Outdom Tran, Westfield State University**  
Money and Sports

**Zoe Luft, Westfield State University**  
The Medal Wins in the Summer Olympics: A Statistical Analysis

**Michael Mailloux, Westfield State University**  
Super Bowl Success and the NFL Draft

**Elizabeth Field, Southern Connecticut State University**  
Rank Numbers of Graphs that are Combinations of Paths and Cycles

**Elyssa Cipriano, Rhode Island College**  
Ordered Generalized Whist Tournaments for  $v$  Players,  $v \equiv 1 \pmod{6}$

**Bryan Carrillo, Bates College**  
The Riemann Zeta Function and the Prime Number Theorem

**David Xing, Williams College**  
Layer Sequencing and Flat-Foldability of Uniformly Gridded Polygons

### **Graduate Student Presentations at the Fall 2012 Meeting**

**Megan E. Heenehan, Wesleyan University**  
Constructing Graphs with No Immersion of Larger Complete Graphs

**Mateusz Pacha-Sucharzewski, Bridgewater State University**  
Vehicle Routing Algorithms

### **New Colleagues Presentations at the Fall 2012 Meeting**

**John Burke, Rhode Island College**  
Cobordism and Infection of Knots

**Heika Todt, Stonehill College**  
An Introduction to Integer Partitions and Asymptotics of Partitions

**Adrianoi Marzullo, Becker College**

On the Periodicity of the First Bette Number of the Semigroup Rings  
under Translations

**Pannapa Changpetch, Bentley College**

Model Selection for Categorical Data when the Interaction Effect Is  
Presented

**Hubert Naussi Kamdem, Roger Williams University**

Coexistence of Microorganisma in a Continuously Stirred Tank  
Reactor

**Braxton Carrigan, Southern Connecticut State University**

Non-Triangular Polyhedron

**Vignon Oussa, Bridgewater State University**

Sinc Functions on the Heisenberg Group

**Beste Gucler, University of Massachusetts Dartmouth**

Teaching and Learning of Limits: Pedagogical and Conceptual  
Challenges

**Sarah Wright, College of the Holy Cross**

I Drank the IBL Kool-Aid!

## **Contributed Papers Presentations at the Fall 2012**

### **Meeting**

**Number Representations and Dynamic One-Pile Nim**

Harold Reiter, UNC-Charlotte

**Two Japanese Theorems**

Peter Ash, Math for the Rest of Us

**Using KenKen to Build Resoning Skills**

Harold Reiter, UNC-Charlotte

### **“Stepdaughter” Amicable Pairs**

Patrick Costello, Eastern Kentucky University

### **Comparing the Period of $1/p$ to a Statistical Model of the Generators of $Z_p^*$**

Roger Bilisoly, Central Connecticut State University

### **Mobility Management Project**

Uma Sharma, Bridgewater State University

### **Multidomain WENO Finite Difference Method**

Kurt Sebastian, US Coast Guard Academy

### **Nim for Several Players**

ASnnela Kelly, Bridgewater State University

### **Sadisticube-Analysis of a New Puzzle**

Jean-Marie Magnier, Springfield Technical Community College

### **Never Cross a Sea Urchin: A Problem in 3-dimensional Geometry**

Derek Smith, Lafayette College

### **Math Teachers’ Circle: Challenges and Rewards**

Hema Gopalakrishnam, Sacred Heart University

### **The Electoral College is the Worst Form of Democracy, Except for All the Others**

Jeff Suzuki, Brooklyn College

### **A Multimedia Intensive Course Redesign of Applied Statistics I**

Jacob A. Gagnon, Worcester Polytechnic Institute

### **Undergraduate Research Experiences Using Difference Equations**

Zachary Kudiak, Mount Saint Mary College

### **Open Problems for (Undergraduate?) Research**

Heidi Burgiel, Bridgewater State University



Northeastern Section Fall MAA Meeting , Project  
NExT

**MAA Northeastern Section Newsletter “Lite”  
Fall 2013**

**Full Newsletter accessible from [www.maa.org/northeastern](http://www.maa.org/northeastern)**

**WHEATON COLLEGE, NORTON, MA**

**58TH FALL MEETING OF NES/MAA**

**Meeting web site: [www.maa.org/northeastern/meetings.html](http://www.maa.org/northeastern/meetings.html)**

**Program Committee:**

**Tommy Ratliff (chair), Wheaton College**

**Rachelle DeCoste, Wheaton College**

**Jim Tattersall, Providence College**

**Elizabeth Donovan, Bristol Community College**

**Local Arrangements Committee:**

**Janice Sklensky, Wheaton College**

**Shell Leibowitz, Wheaton College**

**Susan Colson, Wheaton College**

**Tommy Ratliff, Wheaton College**

**Friday, November 22, 2013 Northeastern Section NExT Program**

**11:30** Registration in Spencer Cafe, 1<sup>st</sup> floor Mars Science  
Center

**12:00 – 1:00** Section NExT lunch

**1:00 – 2:00** Section NExT talk: Jennifer Quinn, University of  
Washington-Tacoma

**NES/MAA 58th Meeting**

**11:30 – 6:30** Registration in Spencer Cafe, 1<sup>st</sup> floor Mars Science  
Center

**1:30 – 3:30** Student Problem Solving Competition

**1:30 – 3:00** Executive Committee Meeting

**2:30 – 3:30** Refreshments

**3:30 – 4:30** Roller Coaster Math

Meredith Greer, Bates College

**4:30 -- 6:30** Undergraduate Student Presentations

- 6:30 – 7:45     Buffet Dinner
- 6:45 – 8:00     Banquet
- 8:00 – 9:00     Incorporating the Environment into Undergraduate  
Math Courses  
Catherine Roberts, College of the Holy Cross

**Saturday, November 23, 2013**

- 8:00 – 11:00    Registration in Spencer Cafe, 1<sup>st</sup> floor Mars Science  
Center
- 8:00 - 9:00     Coffee and Breakfast Snacks
- 9:00 – 10:00    Christie Lecture:  
Mathematics and Climate: A New Partnership  
Hans Kaper, Mathematics and Climate Research  
Network
- 10:00 – 10:30   Business Meeting
- 10:30 – 11:00   Break Sponsored by Philosophy of Math Special  
Interest Group
- 11:00 – 12:00   New Colleague Talks
- 12:00 – 1:00    Contributed Papers
- 1:00 – 2:00     Mathematics to DIE for: The Battle between Counting  
and Matching  
Jennifer Quinn, University of Washington-Tacoma
- 2:00 – 3:00     Graduate Student Presentations
- 2:00 – 3:30     Philosophy of Math SIGMAA Session



Frank Ford  
Newsletter Editor  
Dept of Math/CS  
Providence College  
Providence, RI 02918