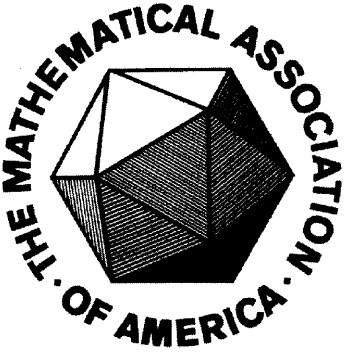
NORTHEASTERN SECTION



NEWSLETTER

SPRING 2004

Volume 26 **Number 1**

EXECUTIVE COMMITTEE

NORTHEASTERN SECTION
MATHEMATICAL ASSOCIATION OF AMERICA
FUTURE SECTION MEETINGS

June 4-5, 2004 — Roger Williams College, Bristol, RI

Program Committee
- Julie Levandosky, co-chair, Framingham State College
- Jason Molitierno, co-chair, Sacred Heart University
- Hema Gopalakrishnan, Sacred Heart University
- Ed Sandifer, Western Connecticut State University

Local Arrangements: Joel Silverberg, Roger Williams College; Bruce Burdick, Roger Williams College; Frank Ford, Providence College

Nov. 19-20, 2004 — Worcester Polytechnic Institute, Worcester, MA.
Local Arrangements: Brigitte Servatius, Worcester Polytechnic Inst.

June, 2005 (date to determined) — Bates College, Lewiston, ME.
Local Arrangements: Bonnie Shulman, Bates College

Nov. 18-19, 2005 (The Northeastern Section's Semi Centennial.)
University of New Hampshire (site of first Section Meeting)
Program Committee: Jim Tattersall, Providence College

OTHER ACTIVITIES

June 2, 2004 — Roger Williams College, Bristol, RI
Short Course: ***Creative Problem Solving***
Mikhail Chkhenkeli,
Western New England College

OTHER COMMITTEES/COORDINATORS

Short Course Committee: Will Stout (stout@salve.edu); Dennis Luciano (dluciano@wnec.edu); Paul Estes (ple@mail.plymouth.edu)

Dinner Meetings
Coordinator: Lucy Kimball (lkimball@LNMTA.bentley.edu)

Awards: NES/MAA Award for Distinguished Teaching (Nominations to Ockle Johnson)

Web page: access it via http:/www.maa.org or directly with http://www.southernct.edu/organizations/nesmaa/
Webmaster: Ross Gingrich, Southern Connecticut State University (gingrichr1@southernct.edu)

Section Project NexT: Next Meeting at Spring Meeting.
Coordinator: Lisa Humphreys, Rhode Island College (lhumphreys@ric.edu)

Message from the Chair…….Sarah Mabrouk

Greeting! I want to begin by thanking you all for your kind encouragements as I begin my term as Section Chair. Many of you have expressed interest in participating in Program Committees or in hosting a meeting at your college/university – I have enjoyed our telephone conversations and emails and I hope that our discussions will come to fruition. Anyone who is interested in participating in a Program Committee or in hosting a meeting is always welcome to call or to email – it is great fun and a wonderful way in which to meet others in the Section or to show off your college/university!

I would like to thank Laura Kelleher, Ann Kizanis, and Frank Battles for their encouragement and helpful information about the Section and the responsibilities of the Section Chair. It is nice to know that my organizing meeting programs, coordinating local arrangements, and organizing sessions for National were good training for the job. I promise to do my best for the Section!

I want to thank Ockle Johnson, my predecessor, for the great job that he did as Section Chair! I have appreciated his encouragement and counsel as I organized meeting programs and as I made the local arrangements for the Framingham meeting. Ockle has continued to be my wise counsel and great encourager, and it is nice to know that he is only an email or a phone call away.

I am glad that Ockle shared my vision for creating guidelines for program committees and for local arrangements, and I enjoyed writing the guidelines with him. These guidelines will be helpful for organizers of future meetings. Since Ross has posted the local arrangements and program guidelines on the Section website in MS Word and pdf formats, I hope that anyone who is interested in hosting a meeting or in participating in organizing a program will feel free to read the guidelines and to contact me to ask any questions that may come to mind.

This fall's meeting at Wellesley College was filled with diverse and informative talks – from baseball statistics to change ringing, how's that for variety! Frank Ford and his committee, Kathy Bavelas, Mary Sullivan, and Rebecca Sparks, organized this enjoyable program. Ann Trenk and her committee, Stanley Chang and Megan Kerr, did a great job with the local arrangements. Ann's efforts greatly increased the number of student papers presented during the meeting as well – five concurrent student paper sessions with twenty-five student papers!

If you are doing some interesting research with students or if you have given assignment/projects that have produced interesting results, why not suggest to your students that they give a presentation during the student paper session during the spring meeting at Roger Williams University? This would be a great experience for them and a great opportunity for students interested in graduate study in the future. You will enjoy watching your students give presentations as well! Please contact Mike Cullinane or Lisa Humphreys for

more information.

Preparations for this spring's meeting at Roger Williams University are going well. Program Co-Chairs Julie Levandosky and Jason Molitierno and their committee, Hema Gopalakrishnan and Ed Sandifer, have put together a program that includes presentations by David Abrahamson and Rebecca Sparks, William Barker, Donna Beers, Robert Benedetto, Robert Bradley, and Rick Cleary, and this year's Battles Lecture will be given by Frank Farris. With this selection of speakers, I am looking forward to the meeting already! Bruce Burdick, the Local Arrangements Coordinator, and his committee, Joel Silverberg and Frank Ford, are doing a great job with the local arrangements for the meeting. Bruce has been working hard to manage the costs and to work with the Roger Williams University staff to arrange the housing and rooms for the meeting, the Section NeXT activities, and the minicourse prior to the meeting.

This spring's Section NeXT activities organized by Lisa Humphreys include Donna Christy's presentation that will appeal to all of us since it addresses the needs of general education students and pre-service elementary school teachers and a discussion of tools, problems, activities, projects, and technology for first and second semester calculus courses. Very nice, Lisa, and well timed for course preparations for the fall semester!

The Section will offer a minicourse prior to the spring meeting. This course on creative problem solving will be conducted by Mikhail Chkhenkeli of Western New England College. Dennis Luciano and his committee, Will Stout, Ross Gingrich, and Frank Ford, have made an excellent choice since this course will include activities that will appeal to most everyone: hands-on problem solving activities in geometry, algebra and number theory, combinatorics and probability theory, graph theory, and topology as well as mathematical brain teasers. Gentlemen, there better be room for me in the minicourse! If you have ideas for future minicourses, please feel free to contact Dennis or me.

Arrangements for the Fall 2004 meeting at Worcester Polytechnic Institute are underway. Brigitte Servatius, the Local Arrangements Coordinator, is working hard making preparations for the meeting. Program Chair Suzanne Weekes and her committee, Peter Christopher and Brogdan Vernescu, will organize the program. I am delighted to announce that the Section's application for a Polya Lecturer was approved and that David Bressoud, Macalester College, accepted our invitation to give a presentation during the WPI meeting. He will give both a mathematics talk and a discussion of the new CUPM Curriculum Guide. In addition, Art Benjamin, Harvey Mudd College, who will be on sabbatical leave at Brandeis University in the fall will give a presentation during the meeting, and Ezra Brown, Virginia Polytechnic Institute and State University, will give the Christie Lecture

The Distinguished Teaching Award Committee was extremely impressed with the qualifications and accomplishments of the nominees. Our

Section is truly blessed to have such incredible teachers! As Chair of this year's Distinguished Teaching Award Committee, it is my honor and pleasure to announce that this year's distinguished teacher is P. Joseph McKenna! Joe is an all-around great teacher, inspiring students in high school, college and graduate school as well as colleagues through his research, articles, and teaching. You can read more about Joe's teaching accomplishments later in the Newsletter. I want to thank my committee, Kathy Bavelas, Laura Kelleher, Lois Martin, Jason Molitierno, and Emma Previato, for all their hard work. This was not an easy task since we had such fantastic and strong nominees.

It is not too early to begin thinking about nominations for next year's Distinguished Teaching Award. If you have made a nomination in the past, this is a good time to update or add to the nomination if you would like to renew the nomination for next year. If you would like to initiate a nomination, this is a good time to begin to create the nomination packet. Information about the NES/MAA Award for Distinguished College or University Teaching of Mathematics and about making a nomination can be found in the Archives section of the Section website.

A brief history of the Northeastern Section of the Mathematical Association of America is now available on the Section website, http://www.southernct.edu/organizations/nesmaa/history.html. It is great to read about the Section from its inauguration on November 26, 1955 to the present through contributions written by Donald and Shirley Blackett, James E. Ward, Clayton Dodge, and James J. Tattersall. I especially appreciate Jim's thank you to Section Newsletter editors Dot Meserve, Eric Nummella, Ken Lane, Phil Mahler, and Frank Battles for providing "a wonderful paper trail". James Tattersall, our Section's historian-archivist, is the Program Chair for the Section's fiftieth anniversary meeting to be held at University of New Hampshire, the location of the first NES/MAA meeting, in November 2005.

Ross Gingrich continues to do a great job maintaining the Section website. He posts information about Section meetings, National meetings, information of interest to students, Section NeXT information, relevant hyperlinks, and maintains the Section Archive. Be sure to check out the website and if you have any suggestions for additional information that you would like to access from our site, please let Ross or me know. We would like our site to be a useful resource for all who access it.

National has some great workshops that will be offered this summer. The Professional Enhancement Programs of the MAA, PREP, includes workshop topics such as mathematical biology, discrete mathematics, statistical ratemaking, and quantitative literacy across the curriculum. Workshop information and application deadlines can be found at http://www.maa.org/prep. Having participated in a PREP workshop last year, I can tell you that they are a great opportunity. In addition, there are the PMET (Preparing Mathematicians

to Educate Teachers) workshops. If you teach prospective teachers at the elementary, middle school, or secondary level then these workshops will provide you with opportunities to share ideas and to discuss and to learn more about appropriate content and ways in which to teach future teachers. My colleague Joyce Cutler participated in a PMET workshop last year, and she said that it was a great experience. To find out more about the PMET workshops, visit http://www.maa.org/pmet. There is a nice selection of PREP and PMET workshops available, and I must admit that I would love to participate in all of them – if only there were enough time!

Mathfest 2004 will be held in Providence, Rhode Island August 12 – 14! How nice to have Mathfest in our area! If you are considering submitting a contributed paper for the meeting, the call for papers for contributed paper sessions is posted at http://www.maa.org/news/012304cps04.html and this page lists the submission deadline as Tuesday, May 4, 2004. I always enjoy Mathfest and it is a great treat for the end of the summer! I hope to see you there!

Message from the Governor..... Laura Kelleher

If you are looking for some interesting mathematical reading, you might consider some of the MAA's new publications. Among these are *Math Through the Ages – Expanded Edition* by William P. Berlinghoff and Fernando Gouvêa of Colby College and *Writing Projects for Mathematics Courses* by Annalisa Crannell, Gavin LaRose, Thomas Ratliff of Wheaton College, and Elyn Rykken. In addition, MAA online includes several interesting ongoing columns, including *How Euler Did It* by Ed Sandifer of Western Connecticut State University.

At the Board of Governors Meeting in Phoenix, it was announced that the American Mathematical Association of Two-Year Colleges (AMATYC) and the MAA have jointly received funding from the ExxonMobil Foundation for Project ACCCESS (Advancing Community College Careers: Education, Scholarship and Service). The goal of Project ACCCESS is to develop a cadre of new two-year college mathematics faculty who are effective members of their profession. The objectives of this program are for participants to gain knowledge of the culture and mission of the two-year college and its students, acquire familiarity with the scholarship of teaching, commit to continued growth in mathematics, and participate in professional communities. Open to new mathematics faculty from two-year colleges, fellows in this project will attend two consecutive AMATYC conferences, where they will participate in pre-conference workshops as well as regular conference activities. In the intervening year, they will attend an MAA Section Meeting near their home institution. Be sure to encourage eligible colleagues to apply for this program. Additional information about this program can be found at http://www.maa.org/ProjectACCCESS.

The MAA has established the Annie and John Selden Prize for Research in Undergraduate Mathematics Education to promote and recognize this research. The prize will be given every other year to a researcher who has established a significant record of published work in research in undergraduate mathematics education and who has been in

the field at most ten years. Watch the MAA website at www.maa.org for further information on a submitting a nomination for this award.

The MAA Executive Committee approved the formation of a new Special Interest Group of the MAA (SIGMAA) on Quantitative Literacy. There has also been some discussion of a SIGMAA for High School Teachers.

Michael Pearson, MAA Director of Programs and Services, has asked for assistance updating the MAA publication: *We Do Math! Careers in the Mathematical Sciences*. If you can identify a student whose career profile could be included in the next revision of this brochure, please contact him via pearson@maa.org.

I encourage you to participate in the Northeastern Section's upcoming activities: the NES/MAA Dinner Meetings, the Section Short Course, and the Section Meeting in June at Roger Williams University in Bristol, Rhode Island. I hope to see you at one or more of these and, of course, at *Mathfest* in August in Providence

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

I gave my last Treasurer's report at the Fall MAA meeting at Wellesley College. At this time, our balance was 11,877.84. The meeting at Wellesley College was well organized and very successful. The expenses from that meeting totaled $5,150.65 while the income made totaled $7,198.00. We spent a total of $1,177.87 for the printing, postage and preparation of the Fall 2003 newsletter. We also incurred an office expense of $17.30. As a result, our present balance is $12,730.02.

Our section has been saving money from the postage and printing of our newsletters, since many of our members have now adopted the newsletter "lite" format. This past year, more postcards (versus complete newsletters) have been mailed to our members.

I am now in the process writing a summary of our section's 2003 financial transactions for the headquarters' finance department, and at the beginning of the summer, I shall be writing our section's annual report.

That is my update for now! We are all looking forward to the Spring MAA meeting at Roger Williams University, where I will update you further on our financial state. Have a good semester everyone!

Two-year College Representative's Report.....Kathy Bavelas

The NEMATYC 2004 meeting was hosted by Mount Wachusett CC on April 2-3.

The NYSMATIC 2004 Annual Conference "Building Bridges" is being held in Kingston NY on April 23 – 25 (http://www.nysmatyc.org)

The annual MATYCONN Spring Meeting is being hosted by Norwalk CC in Norwalk CT on April 30. Rona Gurkewitz from Western CT State University will do a workshop on origami polyhedra. She is a founding member of the Friends of the Origami Center of America (now called Origami U.S.A.) . She co-authored her third and most recent book, **Modular Polyhedra Origami**, with Bennett Arnstein. The dinner presentation will feature Ric Zannoni who

will discuss the use of manifolds in analyzing and modeling data. He will also provide highlights and slides of his trip to the South Pole, which developed out of his work at the UMASS Terahertz Lab. He began his academic work in the CT Community College System.
(http:155.43.16.5/matyconn/Spring2004MeetingNCC.htm)

The AMATYC Outer banks Summer Institute: "Developmental Algebra Using a Function Approach" will be held June 13 – 18 in Duck. N.C. (http://www.amatyc.org/SumInst/2004/2004AMATYCregistration.pdf)

I received The ATOMIC (Associated Teachers of Mathematics in CT) Robert A. Rosenbaum Award in March. The award is given in recognition of leadership and significant contributions to the mathematics community. Bob is a Professor Emeritus of Wesleyan held in the highest regard. He was the first recipient of the award in 1995 and the award was named after him.

From the Newsletter Editor .....Frank Ford

We all welcome Sarah Mabrouk as our new Chair. Anyone who has attended a recent Section Meeting knows the energy and excitement she adds to every meeting. Some might not know that she is also a regular organizer of sessions at the National MAA meetings and she will continue doing that this summer in Providence. She inherits a healthy Section from Ockle Johnson who now retires to the chore of selecting the next distinguished teacher winner in our Section. We owe him a great deal of thanks for his service.

Our Section meeting is coming soon and this year, we will try a mini-course the day before the meeting. Dennis Luciano has arranged an interesting course which is described elsewhere in this newsletter. We hope you enjoy the new format of piggy-backing the mini-course on the Section meeting. If you come for the meeting on Thursday and are not involved with Project NExT, you can spend Friday morning enjoying the town of Bristol.

The biggest event of the year is the return of MathFest to our Section. Providence will be hosting the meeting again and this time there will be a Waterfire, an event you should experience at least once. The program for the meeting is very strong and there will be special sessions for graduate students.

Congratulations to our Distinguished Teacher of the year: P. Joseph McKenna, University of Connecticut. This is the second winner from the University of Connecticut which ties tem for second place with Boston University for most winners behind Williams College. It is time to plan for the next cycle. Prepare your nominations now. It is not that hard a task. We get more nominations than most other sections of the MAA and we want to continue that strength.

Student Papers Presented at the Fall 2003 MAA/NES Section Meeting:

Brian D. Ginsberg, Yale University
The Nearly Secret Theorem of E. Midy – An Extension after 165 Years
Elizabeth Bellenot, Wellesley College
Effects of Biological Invasions on Ecological Communities
Jessica S. Lee, Wellesley College
Mersenne Primes
Michael J. Coleman, Boston University and Sidharth Rupani, WPI
Modeling iBOT Belt Dynamics
Seila Selimovic, Wellesley College
Who Wins: The Mathematician or The Physicist? The Dirac Delta function and Its Use in Quantum Mechanics
Iuli Pascu, Wellesley College
A Graphical Interpretation for Complementary Sequences
Karin Steece, Wellesley College
The Chinese Postman Problem
XinXin Du, Wellesley College
Monte Carlo Simulations on One Electron Per Site, Two-Dimensional Square Lattices
Paula F. Popescu, Wellesley College
Games with Hats
Kathleen Leahy, College of the Holy Cross
Enigma – The Code that Changed History
Charlie Rossetti and Matthew Angelucci, Bentley College
Dynamica
Brandon Dwyer, Bentley College
A Student's Look at the First Actuarial Exam
Jenny Kirouac, Westfield State College
Naming Really Large Numbers
Kari Lock, Williams College
Making Best Approximates Appear Through Magical Intervals
Neil Hoffman, Williams College
Double Bubbles in Other Universes

Contributed Papers Presented at the Spring 2003 MAA/NES Section Meeting:

Euler Goes Beyond Isosceles
Ed Sandifer, Western Connecticut State University
Mathematical Models and Art in the Early 20th Century
Angela Vierling, Boston University
A Mathematician at a K-8 School
Debbie Borkovitz, Wheelock College

Group Quizzes using the Think-Share-Write Method
Hema Gopalakrishnan, Sacred Heart University
The Formulation of Vector Analysis Valid in All Coordinate Systems
Domina Eberle Spencer and Terri L. Mascardo, University of Connecticut
Using a Partial Singular Value Decomposition to Approximate a Large SparseRectangular Matrix
James Baglama, University of Rhode Island
An Application of Logic to Combinatorics
Rehana Patel, St. John's University
Further Remarks on Systems of Interlocking Exact Sequences
Joanna Su, Providence College

New Colleague Presentations at the Spring 2003 MAA/NES Section Meeting:
Complementary Sequences
Sam Vandervelde, Wellesley College
Landscape Erosion
Ted Welsh, Westfield State College
Technology in Mathematics for Preservice Elementary Teachers
Barbara Boschmans, Plymouth State College
Error-control codes and related areas of discrete mathematics
Sarah Spence, Franklin W. Olin College of Engineering
A Historic Point of View on Trigonometric Functions
Semra Kilic-Bahi, Colby Sawyer College
The Regularity of Weakly Harmonic Maps on Riemannian Manifolds with Bounded Measurable Metrics
Wataru Ishizuka, Providence College
Rolle's Theorem over Finite and Local Fields
Cristina Ballantine, College of the Holy Cross
An Examination of Teacher Knowledge Base Among Undergraduate Mathematics Faculty
Kimberly B. Santucci, University of Connecticut
An Introduction to Weak 2-cocycles
Jill Shahverdian, Quinnipiac University

P. Joseph McKenna Wins the Northeastern Section 2004 Distinguished Teacher Award

(Sarah Mabrouk, chair of the distinguished teacher committee, sends us this announcement of our 2004 winner.)

The Northeastern Section is proud to announce that P. Joseph McKenna, University of Connecticut, is the winner of this year's NES/MAA

Award for Distinguished College or University Teaching of Mathematics.

The Distinguished Teaching Award Committee had the challenge of selecting this year's winner from among the very strong field of nominations. When reviewing Joe McKenna's nomination, we were impressed by how he integrates teaching and his very successful research, treating teaching and research as one rather than as separate and unrelated endeavors, thereby achieving what very few professors do, a wonderful balance that allows him to share knowledge and to inspire students. We were impressed by the strong student comments about his passion for mathematics, how he truly loves what he does and how he conveys this to his students as well as how he teaches his students to think, to analyze, and to question rather than to memorize and to reproduce. His students speak of his use of examples and visual aids to help them to discover and to understand how the mathematics that they are learning is applicable in real-life situations. In addition, students extol his genuine interest in and respect for them as *students* and as *individuals*, his concern for their overall welfare, and his accessibility for help outside the classroom both academically and personally. We were very impressed by his strong mentoring and by his concern for students both past and present as well as by how he has inspired many students to study mathematics at the undergraduate and graduate levels during his twenty-seven years of teaching, with many following in his footsteps to study differential equations.

Lisa Humphreys, who has known him for more than sixteen years as a student, mentor, and friend, speaks very highly of him and of his contributions to mathematics and to the teaching of mathematics. This is what she has to say about Joe McKenna:

"I was once one of those undergraduates taking a course to fulfill an education school requirement. Joe 'discovered me' early on in the semester. He began talking to me outside of class and was actually the first person to ever mention the words 'graduate school'. Through his encouragement, I applied to graduate school and entered the program at Uconn in the fall of 1989. All the confidence that I had gained during my undergraduate years was put to the test when I was surrounded by extremely talented graduate students (I had a math education undergraduate degree). During the difficult transition Joe's office door was always open. He was always there with extra help or just to chat. As time went on I became stronger mathematically and had more confidence. Joe became my thesis advisor and I studied partial differential equations. His excitement, especially about the Tacoma Narrows Bridge, is contagious. I graduated in 1994 and since that time I have worked on many projects with Joe. He is always willing to discuss mathematics and he still manages to make me think that I can do anything."

"Over the years I have watched his interaction with undergraduates, in addition to formerly being one myself. Students flock to his classes. He spends

countless hours helping students. His main strength in the classroom is his ability to see the big picture and his non-intimidating demeanor. He makes his expectations clear to the students. Joe is student centered. The students recognize his genuine interest in them. The atmosphere in his classroom is relaxed. Students are encouraged to question and discuss. At the same time, Joe has a commanding knowledge of mathematics and he has a great deal of intuitive insight. He motivates topics through intuition and what makes sense in the physical world."

"In thinking about how his teaching reaches beyond his classroom I would say that his personal connection with the students has the most impact. He will frequently recruit new math majors for the department, engage undergraduates in research projects which in turn frequently leads them to graduate, maintains contact with former students and always be there for advice."

"Joe McKenna has the rare ability to combine highly cited and acclaimed research with excellent teaching. His research enhances his teaching and at the same time he is a caring and insightful instructor who goes beyond the norm. Students marvel at Joe's availability and willingness to provide whatever help they may need. As Melissa Grakowsky put it so well recently, 'his door is always open to his students and researchers for guidance in the math world or in life in general.'"

We applaud Joe McKenna for his inspirational teaching, for his mentoring of students, for his sharing his love of mathematics with students and inspiring them to learn and to grow as mathematicians and as individuals.

From the Colleges (will return in the Fall)

Northeastern Section NExT at Fall Meeting……Lisa Humphreys

The Northeastern Section is continuing a Section NExT program for new and relatively new colleagues on Friday morning before the spring Section meeting at Roger Williams University. The events will take place between 10:00 a.m. and 3:00 p.m. before the Section meeting begins and will not interfere with the Mini-course on Thursday. By providing talks and workshops on issues of interest, opportunities to meet and share ideas with other new colleagues, and an introduction into Section activities, we hope to assist new faculty in their transition from graduate school to professional academic life. We welcome all untenured full time faculty, both those who have and have not been National NExT fellows. The program is below.

Friday, June 4

10:00 a.m. -10:15 a.m.

Registration of prospective Section NExT fellows and preliminary information.

10:15 a.m. -11:15 a.m

Activities for Preservice Elementary School Teachers and General Education Students

Prof. Donna Christy, Rhode Island College

Prof. Christy will share how she uses activities and manipulatives to enhance instruction. Several different mathematical topics will be highlighted.

11:15 a.m. -12:30 p.m.

Lunch

12:30 p.m. -2:00 p.m.

Calculus Across the Section

Each Section NExT participant will bring a calculus item to share with the group. The item, preferably from first or second semester calculus, does not have to be original. Ideas may be from, but are not limited to, the following: technology projects, unusual homework problems, successful test questions, new ways to explain a concept, extra credit problems, websites, graphing calculator, writing projects, proofs, etc. Each participant will have 5 minutes to explain their item and then to circulate copies or references. At the conclusion of this session everyone should have collected a variety of new ideas that can be brought back to the classroom.

3:00 p.m.

Section Meeting begins.

If you are interested, please contact Lisa Humphreys of Rhode Island College at LHumphreys@ric.edu. You should also register for the Section meeting by completing the registration form in the Section Newsletter and check off that you will be participating in the Section NExT program. (If you did not receive a Newsletter, indicate that to Lisa.) Note that the Section NExT activities are free.

Call for Student Papers

Students (and recent graduates) from the Northeastern Section are invited to present talks at the Spring meeting on topics in mathematics, statistics, or computer science. The presentations should be 10-15 minutes in length, on expository work, research projects, employment experiences, or problems from mathematical periodicals. The registration fee and cost of meals will be waived for one student presenter per paper. Interested students should contact Michael Cullinane, mcullina@keene.edu, or Lisa Humphreys, lhumphreys@ric.edu. The deadline for submission is May 14.

Call for Contributed Papers

Participants at the Fall Meeting of the section are invited to submit contributed papers. We are particularly interested in papers that will appeal to a variety of participants. If you are planning to speak about results of your research, keep in mind that the audience most likely will not be familiar with your specialty, so you will want to give some motivation and context for your work. Your presentations should be approximately 15 minutes in length. Please send an abstract and your mailing address together with a list of any special equipment you may need to Tommy Ratliff at tratliff@wheatoncollege.edu. Email submissions are preferred, but you may also send a typed submission to Tommy Ratliff; Department of Mathematics; Wheaton College; Norton, MA 02766 The deadline for submission of abstracts is May 15.

NORTHEASTERN SECTION, MAA
The Mini-Course
Creative Problem Solving
June 3, 2004
Roger Williams University

Mikhail Chkhenkeli, Western New England College

ABOUT THE MINI-COURSE

Mathematics is a problem-solving driven discipline and learning to solve problems is one of the principal reasons for studying mathematics. In this course the presenter will share his experience of teaching Creative Problem Solving courses, as well as provide hands-on activities that illustrate the main philosophy of this teaching method: students discover and learn about the great beauty of mathematics through non-standard and thought-provoking problems that require creative approach. In particular, the course will discuss creative problems from several areas of mathematics, problem-solving techniques, and how these

problems help students to develop their mathematical intuition and imagination.

The course is for college professors and high school teachers who plan to develop and teach problem solving courses, as well as everyone who enjoys the creative process of solving mathematical problems.

MINI-COURSE SCHEDULE
Thursday, June 3rd, 1 p.m. – 6 p.m., with breaks between activities
Creative Problem Solving as a Teaching Method

Hands-on activities:
Problem Solving in Geometry
Problem Solving in Algebra and Number Theory
Problem Solving in Combinatorics and Probability Theory
Problem Solving in Graph Theory
Problem Solving in Topology
Mathematical Brainteasers

ABOUT THE PRESENTER
Mikhail Chkhenkeli is an associate professor in the Department of Mathematics and Computer Science at Western New England College. He received his doctorate in Mathematics from the University of Pennsylvania. He has taught a variety of courses from Pre-Calculus to Differential Topology at the University of Pennsylvania, Williams College, Western New England College, and at the Johns Hopkins University CTY Summer Programs. He has designed and taught several Creative Problem Solving courses for undergraduate math majors and
non-majors, talented high-school students, and mathematics teachers. He is currently working on a book "Creative Problem Solving in Mathematics."

ACCOMMODATIONS/COST
The Mini-Course will be held at the Conference Center of Roger Williams College. There will be a snack break (domestic cheese and fruit with assorted crackers and sodas) midway through the course.

There will be a cash bar starting at 6:15 pm with a buffet dinner at 7 pm. The dinner will include two entrees, Vegetable Lasagna and Marinated Steak Tips, and Caesar Salad, Vegetable, Potatoes/Rice, Dessert, Coffee, Tea, and Decaf.

The total cost for mini-course registration, snack break and dinner is only **$50.**

Housing at the Conference Center is available at a rate of $79, single or double,

in a hotel type room including a continental breakfast. Participants will need to make their own housing reservation by calling 401-683-3600 and indicating that they are part of the MAA group, in order to receive this group rate. We have held 25 rooms at the center until mid-May.

REGISTRATION

Please mail this form (or photocopy) early (deadline May 28) to:

Ann Kizanis, Associate Dean
School of Arts and Sciences
Western New England College
Springfield, MA 01119
email: akizanis@wnec.edu
Telephone: (413) 782-1784

Include a check, payable to NES-MAA, for $50.

MINI-COURSE REGISTRATION

Name_____

Address _____

_____

City_____ State_____ Zip_____

Institution_____

Telephone_____ e-mail_____

Northeastern Section of the MAA
Spring Meeting: June 4-5, 2004
ROGER WILLIAMS UNIVERSITY
BRISTOL, RHODE ISLAND

Friday, June 3, 2004

2:00 – 6:00 p.m. Registration
2:00 – 3:00 p.m. Executive Committee Meeting
3:00 – 3:50 p.m.
Taking the Erlangen Program Seriously: A Modern Approach to Undergraduate Geometry
William Barker, Bowdoin College, Brunswick, ME
4:00 – 4:50 p.m.
Guidelines, Timelines, and Tools for Self-Assessment: Students Get Set for a Mathematics Conference
Donna Beers, Simmons College, Boston, MA
5:00 – 5:50 p.m. **Student Papers**
6:00 – 8:00 p.m. **Dinner and Opening**
8:10 – 9:00 p.m. **Battles Lecture**
Forbidden Symmetry--Relaxing the Crystallographic Restriction
Frank Farris, Santa Clara University, Santa Clara, CA

Saturday, June 5, 2004

8:00 – Noon Registration
9:00 – 9:50 a.m.
An Overview of Benford's Law with Applications to Auditing
Rick Cleary, Bentley College, Waltham, MA
10:00 – 10:20 a.m. Break
10:30 – 11:20 a.m.
The Curious Case of the Bird's Beak
Robert Bradley, Adelphi University, Adelphi, NY
11:30 – 12:00 p.m. Business Meeting
12:15 – 1:15 p.m. Lunch
1:30 – 2:20 p.m.
A Linear Programming Approach to Predicting Award Winners (or, Who needs baseball writers when we know how they'll vote?)
David Abrahamson and Rebecca Sparks, Rhode Island College
2:30 – 3:20 p.m.
The Uniform Boundedness Conjecture for Dynamics over Number Fields
Robert Benedetto, Amherst College, Amherst, MA

3:30 – 4:20 p.m. **Contributed Papers**

3:30 – 4:20 p.m.

The CUPM Curriculum Guide 2004 and the Curriculum Foundations Project

William Barker, Bowdoin College, Bowdoin, ME

Program Committee

Julie Levandosky, co-chair, Framingham State College
Jason Molitierno, co-chair, Sacred Heart University
Hema Gopalakrishnan, Sacred Heart University
Ed Sandifer, Western Connecticut State University

Local Arrangements

Joel Silverberg, Roger Williams College
Bruce Burdick, Roger Williams College
Frank Ford, Providence College

Abstracts / Speakers

Taking the Erlangen Program Seriously: A Modern Approach to Undergraduate Geometry

William Barker, Bowdoin College

An exciting and beautiful approach to undergraduate geometry can be built on Felix Klein's philosophy that geometry is the study of invariants under a group of transformations. Change the group of transformations --- the "symmetries" --- and one produces a new geometry. Much of the development can be done without coordinates, leading to an elegant blending of classical geometry and group theory. This lecture will present an outline of such a course, ending with applications to relativistic space-time and connections to the theory of Lie groups and Lie algebras.

The CUPM Curriculum Guide 2004 and the Curriculum Foundations Project

William Barker, Bowdoin College

For four years the MAA Committee on the Undergraduate Program in Mathematics (CUPM) has labored to produce its Curriculum Guide 2004, a set of recommendations designed to guide Mathematics Departments in designing and revising their programs for undergraduates. One difference from past Guides has been the reliance on information collected from the partner disciplines. This was done via a series of eleven workshops held across the country with representatives of the other disciplines. Organized by the CUPM

subcommittee on Curriculum Renewal Across the First Two Years (CRAFTY) under the title the Curriculum Foundations Project, mathematicians learned what other disciplines need from the mathematics instruction given to their students. This lecture will present the major themes and findings of both the CUPM Curriculum Guide 2004 and the companion Curriculum Foundations Project and indicate how they can be used by departments to improve their programs. The lecturer was heavily involved with both efforts: he was a member of the seven person writing team for the Curriculum Guide and was the Chair of the Steering Committee for the Curriculum Foundations Project.

A Linear Programming Approach to Predicting Award Winners
(or, Who needs baseball writers when we know how they'll vote?)

When a voter casts an award ballot, he often uses numerical criteria in his decision. While no one voter may consciously assign specific weights to such criteria, the results of the balloting may coincide with scoring based on a weighted average of those criteria. We illustrate the process of finding the appropriate weights by studying baseball's Cy Young Award voting over the last decade.

Dave Abrahamson received his Ph.D. in Applied Mathematics in 1981 from Brown University, specializing in differential equataions under the direction of E. F. Infante. He taught at Brown University and The Lincoln School before coming to Rhode Island College in 1986.

Rebecca Sparks received her Ph.D. in 2001 from the University of Rhode Island, specializing in optimization and control systems under the direction of Orlando Merino. She is currently in her third year at Rhode Island College. Dave and Rebecca have combined their research interests and pursue topics in optimization, mathematics in sports, and pedagogy.

Donna Beers, Simmons College,
"Guidelines, Timelines, and Tools for Self-Assessment: Students Get Set for a Mathematics Conference"
Abstract: At many colleges and universities, undergraduates who major in mathematics must fulfill an independent study or capstone project requirement. In this talk we will describe our work this past semester in guiding team-based projects. Topics covered will include: setting goals and expectations, identifying project stages from planning through implementation, introducing students to

research tools and information resources in mathematics, enhancing writing and presentation skills, and developing tools for self-assessment and peer assessment. We will report on lessons learned and consider ways of refining this work for the future.

Bio: Donna Beers is Professor of Mathematics at Simmons College. She did her undergraduate and graduate work at the University of Connecticut where she earned her Ph.D. in commutative algebras. At Simmons she has served as chair of the Mathematics and Computer Science Department, director of the Honors Program, and director of the Information Technology program. Her teaching interests include the preparation of prospective teachers and an interdisciplinary Honors seminar on patterns. Donna has served as chair and governor of the NES/MAA. She has also served on the editorial boards of *The American Mathematical Monthly* and *Mathematics Magazine*. She presently serves on the Dolciani Mathematical Expositions editorial board and on the steering committee of the MAA PREP Workshop: Leading the Academic Department: A Workshop for Chairs of Mathematical Sciences Departments.

Robert Benedetto, Amherst College

"The Uniform Boundedness Conjecture for Dynamics over Number Fields"

Abstract: A polynomial f with rational coefficients maps rational numbers to rational numbers. If we repeatedly compose f with itself, we see that some rational numbers are preperiodic under f. That is, some numbers are eventually mapped to a periodic cycle of points under repeated application of the function. In 1950, Northcott proved that for any fixed f of degree at least two, there are only finitely many rational preperiodic points. In 1994, Morton and Silverman formulated a broad conjecture stating that in the above context, the number of such rational preperiodic points is bounded by a constant depending only on the degree of f. In this talk, we'll discuss their uniform boundedness conjecture, including the evidence and various results surrounding it.

Robert Bradley, Adelphi University

"The Curious Case of the Bird's Beak"

Abstract: The Marquis de l'Hôpital (1661-1704) wrote the first calculus book in 1696, where l'Hôpital's Rule was first published. Among the many other topics covered, l'Hôpital studied cusps, where continuous curves fail to have a derivative. He classified these points as being of two types: the more ordinary type, such as you would find in the “semi-cubic” equation, and a more exotic type, which resembles the shape of a bird's beak. L'Hôpital gave a mechanical argument to show that curves with cuspidal points of this second kind must exist, but did not produce the equation of any such curve. Almost half a century later, Gua de Malves (1712-1785) gave a proof that no algebraic curve could make the shape of a bird's beak. His argument involving infinitesimals was

persuasive, and even Leonhard Euler (1707-1783) initially accepted it as valid. However, in the late 1740's, both Euler and Jean d'Alembert (1717-1783) fashioned counterexamples to Gua de Malves' claim. In this talk, I will trace the development of this curious episode in the history of the theory of equations, which is of interest in its own right, as well as for the light it sheds on the developing concept of function in the 18th century.

Rick Cleary, Bentley College
"An Overview of Benford's Law with Applications to Auditing"
Abstract: Benford's law proposes a distribution of digits, most notably first digits, in measurements that span many orders of magnitude. Auditors have begun using Benford's law as part of fraud detection schemes in a variety of settings. It is well known, however, that Benford's law does not apply in certain conditions, such as when the data is all of the same order of magnitude. In this presentation we give an overview of Benford's law and some ways to use it as a teaching tool. We discuss how the related output from popular auditing software raises interesting statistical questions for the accounting community. (This work is being done jointly with Prof. Jay Thibodeau, Bentley College Department of Accountancy.)

Bio: Rick Cleary is Associate Professor and Chair of the Department of Mathematical Sciences at Bentley, a business university in Waltham, MA. He specializes in applied statistical analyses. He enjoys finding ways to use his knowledge of statistics and the research process to work with people in a variety of fields. In the past few years he has worked on problems in sports, biomechanics, market research, and plant pathology, among others. At Bentley since 2001, he is now learning the ways in which statistical tools are applied in accounting, economics and finance. He previously taught at Saint Michael's College in Vermont (1980-1997) and Cornell University (1997-2001). Prof. Cleary's interests outside the classroom tend to athletics, especially running, golf, baseball and basketball. He was an undergraduate at Oneonta State College in New York, and earned his Ph. D. in Statistics at Cornell.

Frank Farris, Santa Clara University
The Battles Lecture
"Forbidden Symmetry--Relaxing the Crystallographic Restriction"
Abstract: 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 appear to show wallpapers with 5-fold symmetry. The talk is intended to be accessible to

students who know something about level curves in the plane and linear algebra.

Bio: Frank Farris is an Associate Professor in the Department of Mathematics and Computer Science at Santa Clara University, and he is the current editor of *Mathematics Magazine*.

About Roger Williams University

Roger Williams University is an independent, co-educational institution, accredited by the New England Association of Schools and Colleges. The 140-acre waterfront campus in the historic seacoast town of Bristol, Rhode Island provides an ideal setting for learning and teaching. The University's undergraduate curriculum, a fusion of sound liberal arts studies and selective professional programs, is delivered by the faculty of a college of arts and sciences and five professional schools. The Ralph R. Papitto School of Law, which opened in the fall of 1993 and is accredited by the American Bar Association, offers the university's first graduate program.

The University's namesake, Roger Williams, founder of Rhode Island, is remembered as a leading champion of freedom in the American colonies. The government he established 360 years ago was based on religious toleration and separation of church and state.

The Department of Mathematics comprises six wonderful, dynamic individuals with diverse mathematical specialties and outside interests. The department offers a traditional undergraduate major in mathematics as well as a modified major for students seeking a double major with education.

Roger Williams University will host Euler 2004, the third annual meeting of the Euler Society, at our Portsmouth campus August 8-11. This meeting immediately precedes the MAA's MathFest in Providence. See www.eulersociety.org for more information as it becomes available.

Hotel Information

Hotel Possibilities are listed at http://www.rwu.edu/About+RWU/Campus+Visits/Local+Accommodations.htm

Directions

Bristol Campus - *Main Campus*

(Meeting Rooms)

From Boston, Massachusetts:

- Take Route 93 South to Route 24 South to Fall River. From Route 24 bear right onto Route 195 West to Exit 8A (Tiverton/Newport RI) where you will continue on Route 24 South for approximately seven miles. Take Mt. Hope Bridge/Bristol exit. Bear right up hill and across Mt. Hope Bridge. The University is just after the bridge on the right.

From Massachusetts and points north:

- Take Route 128 South (also called 95) toward Rhode Island. Travel south on Route 95 to Route 195 East toward Cape Cod. Take Route 195 East to Massachusetts Exit 2 (Warren/Newport RI, Route 136 South). Follow 136 South for approximately nine miles. Campus is on your left; make a U-turn, just before Mt. Hope Bridge, to main entrance.

From Albany, New York and points west:

- Take Route 87 to Route 90 East (Mass Turnpike). Take Route 146 South to Route 95 South to Providence, Rhode Island. Take Route 195 East to Massachusetts Exit 2 (Warren/Newport RI, Route 136 South). Follow 136 South for approximately nine miles. Campus is on your left; make a U-turn, just before Mt. Hope Bridge, to main entrance.

From New York City and points south:

- Take Route 95 North to Providence, Rhode Island. Take Route 195 East to Massachusetts Exit 2 (Warren/Newport RI, Route 136 South). Follow 136 South for approximately nine miles. Campus is on your left; make a U-turn, just before Mt. Hope Bridge, to main entrance.

Portsmouth Campus - Residence & Conference Center

(For Hotel-style Accommodations)

From Boston, Massachusetts and points north:

- Take Route 93 South to Route 24 South to Fall River. From 24 bear right onto Route 195 West to Exit 8A (Tiverton/Newport) where you will continue on Route 24 South for approximately seven miles. Take Mt. Hope Bridge/Bristol exit. Bear right off the exit and take first right onto Anthony Road. RWU Residence and Conference Center will be your first driveway on the right.

From Albany, New York and points west:

- Take Route 87 to Route 90 East (Mass Turnpike). Take Route 146 South to Route 95 South to Providence, Rhode Island. Take Route 195 East towards Fall River/Cape Cod. Continue on 195 East to Fall River, Massachusetts. Take Route 24 South (Tiverton/Newport) for approximately seven miles. Take Mt. Hope Bridge/Bristol exit. Bear right off the exit and take first right onto Anthony Road. RWU Residence and Conference Center will be your first driveway on the right.

From New York City and points south:

- Take Route 95 North to Providence, Rhode Island. Take Route 195 East towards Fall River/Cape Cod. Continue on 195 East to Fall River, Massachusetts. Take Route 24 South (Tiverton/Newport) for approximately seven miles. Take Mt. Hope Bridge/Bristol exit. Bear right off the exit and take first right onto Anthony Road. RWU Residence and Conference Center will be your first driveway on the right.

If you have questions about registration, you can contact Bruce Burdick by

phone, (401) 254-3463, or by email, bburdick@rwu.edu. Note, accommodations on campus are not within walking distance of the meeting rooms. *For dorm-style accommodations within walking distance, call Bruce Burdick*

PRE-REGISTRATION FORM

(please type or print):Checks should be made to: NES/MAA Mail this form by May 28 (May 20 for rooms) to

Professor Bruce Burdick -- NES/MAA
Department of Mathematics; RWU
Bristol, RI 02809

Name:
Name for badge:
Affiliation:

Address:

Telephone: E-mail:
Pre-registration Fee:
MAA Member ($25.00); Non-member ($30.00)
Student or unemployed ($10.00) $_____
Meals
Banquet Friday ($12.00 per person) $_____
Breakfast Saturday ($6.00 per person) $_____
Luncheon Saturday ($10.00 per person) $_____
Hotel-style rooms with continental breakfast
($79 single/double per room)
(NOT within walking distance of meeting rooms)
$_____
Roommate:_____
Total $_____
Want to attend Sat. 3:30 workshop? Y___ N____
Will you attend Project NeXT? Y____N____
Are you retired?__
Do you teach in HS?_____ in 2-yr College?_____

Frank Ford
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