NORTHEASTERN SECTION

NEWSLETTER

FALL 2004

Volume 26 **Number 2**

EXECUTIVE COMMITTEE

NORTHEASTERN SECTION
MATHEMATICAL ASSOCIATION OF AMERICA
FUTURE SECTION MEETINGS

Nov. 19-20, 2004	Worcester Polytechnic Institute, Worcester, MA.
Program Committee	Suzanne Weekes, WPI
Local Arrangements	Brigitte Servatius, WPI
Committee Members	Bogdan Vernescu, WPI
	Peter Christopher, WPI

June 17-18, 2005	Bates College, Lewiston, ME.
Program Committee:	Bob Dollar, West Rutland HS, VT
	Hema Gopalakrishnan, Sacred Heart Univ.
Local Arrangements	Peter Wong, 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
	Laura Kelleher, Mass. Maritime Academy
	Donna Beers, Simmons College
	Frank Battles, Massachusetts Maritime Academy
	Lois Martin, Massasoit Community College

OTHER ACTIVITIES

Nov. 19,2004	Northeastern Project NExT
	Lisa Humphreys, Coordinator

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

Greetings! I hope that you are all enjoying the change of seasons and the beginning of another academic year. How time flies! It seems like just yesterday that we were in Providence enjoying Mathfest. It was wonderful to see so many of you. Here are some interesting facts about Mathfest attendance: 1230 folks attended the 2004 Providence Mathfest (the 19th largest attendance), 1008 folks attended the 1999 Providence Mathfest (the 23rd largest attendance), and the 2318 folks attended the 1988 Providence Mathfest (the largest Mathfest attendance since the first Mathfest in 1966). The Section had a great presence and affect on the Mathfest program. Tom Banchoff, Laura Kelleher, Carl Pomerance, and Jim Tattersall served on the Program Committee. Many of our members organized paper sessions, minicourses, graduate student sessions, and panel discussions; and one member organized an environmental walking tour of Providence. I applaud you all and say, "Well done!" Wouldn't is be great to have Mathfest in Providence every summer?

We enjoyed the hospitality of the folks at Roger Williams University for this spring's meeting. Bruce Burdick, Joel Silverberg, and Frank Ford handled the local arrangements for the meeting that included a barbeque lunch on Saturday. Co-Chairs Julie Levandosky and Jason Molitierno organized a program with their committee of Hema Gopalakrishnan and Ed Sandifer that included presentations given by Donna Beers, Rick Cleary, and Frank Farris who gave the Battles Lecture. The three student papers were given by Brian Black, Providence College, Scott Pellicane, Broward Community College, and Matthew Palmacci, Framingham State College. Before the meeting, several of us enjoyed the minicourse on problem solving conducted by Mikhail Chkhenkeli. Dennis Luciano did a great job making the local arrangements for the minicourse, ensuring that Mikhail had everything that he needed. So, thank you to everyone who contributed to organizing an enjoyable meeting and minicourse for June 2004!

The fall meeting will be held at Worcester Polytechnic Institute (WPI). Brigitte Servatius and Suzanne Weekes chair the local arrangements and program committees, respectively. The local arrangements and program committees include Bogdan Vernescu and Peter Christopher. All are working hard to make the arrangements for the meeting during which P.K. Aravind, Arthur Benjamin, Jack Graver, and Ileana Streinu will give presentations. David Bressoud will give the Polya Lecture as well as conduct a workshop on the use of the *CUPM Curriculum Guide 2004*, Ezra Brown will give the Christie Lecture, and Joseph McKenna, the winner of the 2004 NES/MAA Award for Distinguished College or University Teaching of Mathematics, will give the Distinguished Teacher Lecture. Suzanne Weekes and Arthur Heinricher will conduct a workshop for undergraduates. Suzanne Weekes has created an informative web page for the meeting, http://users.wpi.edu/~sweekes/NESMAA/ – please check it out for the most up-to-date information about the meeting and registration.

In addition to the Student Paper Session, the New Colleagues Presentations, and Contributed Paper Session, we can look forward to the new Graduate Student Paper Session. This new paper session invites presentations in mathematics, statistics, or computer science that can be on expository work, research projects, variations on intriguing proofs, interesting problems in mathematics, work derived from periodicals,

employment experiences, summer/independent research experiences, or parts of or work related to Master's or Doctoral research projects. I hope that you will encourage your students, past and present, to attend and/or to present during the new Graduate Student Paper Session; for information, please visit http://www.southernct.edu/organizations/nesmaa/CallforGraduateStudentPapersFall2004.pdf. I hope that you will encourage your graduate students to attend and to give a presentation during the spring session as well.

Lisa Humphreys and Ockle Johnson have been working hard on the Section NeXT program. Joe McKenna will demonstrate why he was selected as the 2004 NES/MAA Distinguished Teacher as he shares how to understand and to predict eigenvalues based on the response of mechanical system in his presentation "Intuitive Eigenvalues". I am honored to have been invited to share how I use MS Excel, as you may have never seen it, to enhance the teaching of mathematics.
Elections for Section Officers will take place during the Business Meeting on Saturday, November 20th at the WPI meeting. Rob Poodiack and Tommy Ratliff are candidates for Vice-Chair, Ann Kizanis is the candidate for Secretary-Treasurer, and June Decker and Lois Martin are the candidates for Two-Year College Representative. You can read the candidate statements/biographies at http://www.southernct.edu/organizations/nesmaa/candidatesforsectionofficersfall2004.html. I hope that you will attend the Business Meeting so that you can vote in the election.

Thank you to Laura Kelleher and the nominating committee for their work.
Peter Wong is working hard on the local arrangements for the 2005 Spring Meeting to be held at Bates College in Lewiston, Maine. Bob Dollar and Hema Gopalakrishnan, the program Co-Chairs, are brain-storming for interesting presentations; Bob and I met this week to discuss several promising ideas for the meeting. Dennis Luciano, the Chair of the minicourse committee, is looking for interesting minicourse topics or presenters; if you have any suggestions, please feel free to contact him.

During the Fall 2005 Meeting hosted by University of New Hampshire, the Section will celebrate its semi-centennial. Jim Tattersall, the Program Chair, is already hard at work (as always) organizing the program. Reading the Section history will give you a sense of the growth and change of the Section over the years. Please check it out on the Northeastern Section Archives and History page of the web site at http://www.southernct.edu/organizations/nesmaa/nesmaaarchivesandhistory.html.

I am enjoying my phone and email discussions regarding locations for future meetings. Paul Blanchard says that "it looks hopeful" that the 2006 Spring Meeting will be hosted by Boston University. Jason Molitierno will serve as Local Arrangements Coordinator for the Fall 2006 Meeting at Sacred Heart University. The 2007 Spring Meeting will be hosted by Keene State College, and Ockle Johnson will coordinate local arrangements for the meeting. Jim Hefferon is working on St. Michael's College's hosting the Spring 2007 meeting – this too looks promising. Rick Cleary has agreed to coordinate local arrangements for the Fall 2008 Meeting at Bentley College. Bill Peterson is working hard to negotiate and coordinate Middlebury College's hosting the Spring 2009 meeting. Dennis Luciano has agreed to serve as Local Arrangements Coordinator for the Fall 2009 Meeting at Western New England College. Meetings at Fairfield University and the

College of the Holy Cross look promising for 2010 – I hope that these meetings will come to fruition. As for Fall 2007, Framingham State College will host the meeting, and I could not resist the pleasure of volunteering to serve as the Local Arrangements Coordinator for the meeting. Of course, with all the locations of these meetings being set, the next step is to select Program Chairs and Program Committees. If you are interested in serving on a Program Committee, please let me know. Many of you have already expressed interest in serving on a Program Committee, and I will most certainly accept your offer.

As we look forward to one meeting, planning is always underway for another meeting. If you are interested in organizing a contributed paper session, panel discussion, workshop, or other mathematical activity for the 2006 Joint Mathematics Meetings, please check out the Call for Contributed Paper Session Organizers, http://www.maa.org/meetings/call_cpso0506.html, and the Call for Session Organizers, http://www.maa.org/meetings/call_maaso0506.html. Although the submission deadline for contributed paper session proposals for Mathfest 2005 has passed, you may still submit proposals for panel discussions, workshops, or other mathematical activities for Mathfest 2005.

Raimundo Kovac has joined Mike Cullinane as Co-Coordinator of Student Papers. If you are working on any interesting research with students or if you have any fascinating projects or assignments for which your students give presentations during the semester, please encourage these students to give a presentation at an upcoming meeting.

Ross Gingrich continues to serve as webmaster for the NES/MAA web site. Please check out his updated and more streamlined version, http://www.southernct.edu/organizations/nesmaa/.

Last spring, the College of the Holy Cross, Framingham State College, Providence College, and Simmons College hosted regional dinner meetings. During these dinner meetings, we were treated to Frank Farris's "The Edge of the Universe: Noneuclidean Wallpaper", Tom Koshy's "The Ubiquitous Catalan Numbers", Ann Trenk's "Professors Who Snooze and Those Who Steal: An Introduction to Interval Graphs and Tolerance Graphs", and Lisa Hansen's "Mathematics and Music". If you are interested in hosting a dinner meeting, please contact Lucy Kimball, the regional dinner meeting coordinator. Plans are already underway for the Third Annual NES/MAA Preskenis Dinner Meeting at Framingham State College in April 2005.

Nominations for the 2005 Distinguished Teaching Award are now being accepted. If you have made a nomination in the past, it is important to update the information and recommendations if you would like to renew this nomination for consideration for the 2005 award. If you would like to initiate a nomination, it is time to create the nomination packet. The nomination packet consists of the typed completed Haimo nomination form that can be downloaded from the NES/MAA or MAA web site, a narrative of no more than five (5) typed double-spaced pages describing the nominee's background, experience, teaching style, special contributions, other teaching awards, and evidence of unusual/extraordinary achievement/success in teaching, five (5) one-page letters of recommendation (two (2) from present or former students, two (2) from colleagues, one

of whom could be the department chair, and one (1) additional letter from anyone qualified to comment on extraordinary teaching success), and, if desired, no more than three (3) additional pages that document the nominee's teaching success. Completed nomination packets should be sent to Ockle Johnson, Keene State College, Mathematics Department, Keene, NH 03435-0001. Information about the 2005 NES/MAA Award for Distinguished College or University Teaching of Mathematics and about making a nomination can be found on the Section website. Completed nomination packets must be received by January 15, 2005.

We welcome three new Project NeXT Fellows to the Section, Derek Bruff, Harvard University, Qazi Enamul Hoq, Western New England College, and Jill Shahverdian, Quinnipiac University. I hope that they will join us for the fall meeting at WPI as well as the Section NeXT program.

The MAA in partnership with AMATYC has a new mentoring and professional development program for new two-year college mathematics faculty, Project ACCCESS – Advancing Community College Careers: Education, Scholarship and Service. The first thirty (30) ACCCESS fellows who begin their formal program during the November 2004 AMATYC meeting are required to attend local Section meetings and to participate in Section NeXT activities. Information about Project ACCCESS, funded by a grant from the ExxonMobil Foundation, can be accessed at http://www.maa.org/ProjectACCCESS/.

The US team were all winners at the 45th International Mathematics Olympiad. Five of the six team members won gold medals and one won a silver medal. The team made its best showing of the past ten years, placing second in the 2004 competition. The team from China placed first, and the team from Russia came in third place. Oleg Goldberg of Bedford, Massachusetts won a gold medal with 40 points out of a possible 42 points. Fantastic! Hearty congratulations to the US team!

There are other achievements by Section members to report. Thomas Banchoff received the National Science Foundation's Director's Award for Distinguished Teaching Scholars. Tom was one of eight to receive the NSF's highest honor for excellence in teaching and research. Ed Burger received the 2004 Chauvenet Prize for Expository Writing for 'Diophantine Olympics and World Champions: Polynomials and Primes Down Under" that appeared in *The American Mathematical Monthly* in November 2000. Dennis Berkey, the 1978 winner of the Boston University Metcalf Cup and Prize for Excellence in Teaching, was selected from more than 130 nominations as President of Worcester Polytechnic Institute. Among other things, Dr. Berkey is the author of two textbooks, both in their third editions, he has published research in applied mathematics, differential equations, and optimal control, and served Boston University for thirty years in a variety of capacities including professor, department chair, dean, and provost. Congratulations to all!

With the end of October upon us, we can look forward to the WPI meeting on Friday, November 19, 2004 and Saturday, November 20, 2004. Of course, time seems to fly by after Thanksgiving which brings us to final exams during December. Then, we can look forward to the Joint Mathematics Meetings in Atlanta, Georgia January 5 – 8, 2005. Visit

http://www.ams.org/amsmtgs/2091_intro.html, for program, registration, and housing information for the 2005 JMM. I look forward to seeing you at WPI in November and in Atlanta in January!

Message from the Governor..... Laura Kelleher

At the Board of Governors Meeting in Providence, Jim Tattersall of Providence College, MAA Associate Secretary, noted that this was the MAA's 82nd summer meeting and the 20th that was held in New England. On behalf of all the members of the NES/MAA, Jim and I welcomed the Board of Governors to the Northeastern Section.

Ron Graham, MAA President, stated that the MAA membership is strong and that the MAA is working on building ties with the NCTM, the National Council of Teachers of Mathematics. Barbara Faires, MAA First Vice President, announced initial plans for the development of a Subcommittee on Strategic Planning whose task will be to develop a strategic planning process.

Tina Straley, MAA Executive Director, has signed a new five year contract. She stated that the MAA is increasing its activity in the area of public policy. She also announced that the MAA International Study Tours continue to be well received. During the 2004 trip to England participants were hosted at the Royal Academy, went to talks and toured the library at Oxford and Cambridge, and visited Stonehenge in the early morning. Watch for announcements of the third annual MAA Mathematical Study Tour to Mexico.

If you have not done so, be sure to explore the newly expanded website for MathDL, the MAA's Mathematical Sciences Digital Library (www.mathdl.org). There you will find the Journal of Online Mathematics and its Applications, as well as Digital Classroom Resources, a collection of online interactive materials, and Convergence, an online magazine devoted to the use of the history of mathematics in the teaching of mathematics. Additional components of MathDL are in the works. Watch for MAA Reviews, an online continuation and expansion of MAA's Telegraphic Reviews previously printed in The American Mathematical Monthly, and an online collection of Classroom Capsules.

All MAA members are encouraged to become familiar with the CUPM Curriculum Guide 2004. This report from the MAA Committee on Undergraduate Programs in Mathematics (CUPM) is the first to address the entire college-level mathematics curriculum. Here you will find recommendations to guide mathematics departments in designing curricula for all undergraduate students, from liberal arts students taking just one course to students majoring in the mathematical sciences. The guide and its companion online document Illustrative Resources for CUPM Guide 2004 are available at www.maa.org/cupm/.

Welcome to all new members of the Northeastern Section and in particular to the national Project NExT Fellows for 2004-2005 who have faculty appointments in the Northeastern Section:

Derek Bruff, Harvard University
Qazi Enamaul Hoq, Western New England College

Jill Shahverdian, Quinnipiac University

I look forward to the Northeastern Section's Fall Meeting at Worcester Polytechnic Institute and to the upcoming MAA/AMS Joint Mathematics Meetings to be held in Atlanta in January 2005. I hope that you will join me at these meetings to hear inspiring talks on mathematics, engage in thoughtful discussions of curriculum, share ideas, and enjoy the company of colleagues.

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

The last Treasurer's report was given at the Spring MAA meeting at Roger Williams University. At this time, our balance was $11,096.34. The meeting at Roger Williams University was a very successful one. Since the last meeting, our expenses have totaled $2,216.97 while the income made has totaled $6,357.06. As part of our expenses, we spent $1,474.75 on the Spring meeting and $492.22 on the Spring short course. The Spring meeting and short course didn't simply break even but made money this year! After the expenses were paid, we made $1,182.31 from the Spring meeting and $107.78 from the Spring short course. Our present balance is $15,236.43.

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. We spent $2,015.65 for the printing and postage of the Spring 2003 newsletter and only $1,397.43 for the Spring 2004 newsletter, due to more members receiving postcards versus complete newsletters. As a result, our balance has been increasing over the last two years.

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 Worcester Polytechnic Institute, where I will update you further on our finances. I wish you all a very enjoyable semester!

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

The annual AMATYC conference will be held November 18-21st in Orlando at the Renaissance Orlando Resort. Thursday there will be a special symposium conducted by Joan Garfield to enhance the teaching of statistics and a themed session called "Mathematical Applications in Biotechnology, and Placement & Assessment. A keynote address by Yolanda T. Moses will present, "Building Bridges and Changing Lives: The Role of the Community Colleges." Saturday morning's breakfast gathering will feature Brian Winkel who will discuss, "Passing the Grade as a Student Consultant."

Nominations for the AMATYC Teaching Excellence Award are due by December 9, 2004.

From the Newsletter Editor.....Frank Ford

One of the main reasons I attend the national MAA meetings is to attend the Section Officers' meetings on the first day. Nancy Hagelhans is chair of the MAA Committee on Sections and she gives us a full summary of what other Sections are doing and provides a place for discussion of Section needs. I thought I would share with you some of the information in her last report on Sections' activities.

There are 29 Sections and we are one of only 9 Sections that hold two Sectional meetings a year. I think that is a good point for us. We are the second largest Section by membership and our total of 2137 is only 9 members behind the Southeastern Section and that leads to one of our problems. Our attendance at the Fall meeting was 8% of our population while the Southeastern attendance is 30%! Oklahoma-Arkansas attracts 37% and Wisconsin 36%. The spread-out Rocky Mountain Section attracts 32% and Indiana had an attendance that equaled 49% of its membership total at its Spring meeting. Why do we attract such a small percentage of our membership? If you have any ideas on how to fix this, let me know. One of the reasons is that many Sections have many more student and contributed papers than we do. They normally have more than even the exceptional number of student papers Ann Trenk brought to our meeting last year. Last year, we had 22 undergraduate students at our fall meeting but Southeastern had 160.

Another strength for us is that we have an excellent gender balance among our officers. Only three sections have at least half females among their officers and we are one of them. Several Sections have only one female officer.

We have always been able to have candidates that are worthy of our annual teaching award . A few Sections did not give a teaching award last year. Quite a few Sections give a service award each year. Should we consider that? I'd like to hear your comments.

Next time you come to national MAA meeting, join us at the Section Officers' meeting. Anyone can attend.

Student Papers Presented at the Spring 2004 MAA/NES Section Meeting:

Drawing Graphs from Degree Sequences: A Computer based
Brian Black, Providence College,
Approach to Handling Recursive Algorithms
Matthew May, United States Military Academy, West Point
Explaining individual incumbent vote choice from 1972-2000: Can individual incumbent vote choice in U.S. presidential elections be predicted?
Scott Pellicane, Broward Community College, Florida
A "Short" Differential Equations Course
Matthew Palmacci, Framingham State College, MA
Catalan Numbers

Contributed Papers Presented at the Spring 2004 MAA/NES Section Meeting:

Joel Silverberg, Roger Williams University
Thinking Outside the Triangle: a Fresh Look at the Teaching of Trigonometry
Rob Poodiac and Dan McQuillan, Norwich University
Symmetric Derivatives and the Unit Circle
Maky Manchola
A "Short" Differential Equations Course
Mohammad Salmassi, Framingham State College3, MA
Fibanacci Polynomials
Bruce S. Burdick, Roger Williams University
John Eliot's The Logick Primer, a First in Two Languages

Elections for Section Officers: Fall 2004 ..... Nominations Committee

The Northeastern Section of the MAA will be holding election for three section officers at the Fall Meeting in November: the Vice-Chairperson, the Secretary-Treasurer, and the Two-Year College Representative. The duties of the Section Officers are given in the Section Bylaws. In addition, the new Vice-Chairperson will succeed to the position of Chairperson upon adjournment of the Fall 2005 meeting of the Section.

The nominations from the Nomination Committee are given below, followed by short biographies of each of the candidates.

Vice-Chairperson:
Rob Poodiack, Norwich University
Tommy Ratliff, Wheaton College

Secretary-Treasurer:
Ann Kizanis, Western New England College

Two Year College Representative:
June Decker, Three Rivers Community College
Lois Martin, Massasoit Community College.

Candidates for Section Officers Fall 2004 Statements
Vice-Chairperson:
Rob Poodiack, Norwich University
Rob Poodiack is an assistant professor of Mathematics at Norwich University, where he's been for five and a half years. He received his B.S. in Computer Science from Cornell University in 1988, his M.A. in Mathematics from Western Connecticut State University in 1994, and his Ph.D. in the Mathematical Sciences (in analysis, with Mike Wilson) from the University of Vermont in 1999. An MAA member since 1997, Rob was Local Arrangements Chair for the Spring 2001 meeting at Norwich University. He was also a co-presenter of the Summer 2002 Short Course on incorporating web pages into mathematics courses at Plymouth State University. Rob served on the local arrangements committee for Mathfest 2002 in Burlington, VT. Rob is also a member of the Vermont State Mathematics Coalition, a group of university professors who travel to high schools throughout the state giving presentations to students on various interesting topics. At Norwich University, Rob is co-advisor of the student section of the MAA and has

organized the highly successful Integration Bee to kick off Mathematics Awareness Month every April. His goals for the Northeastern Section are to continue the movements toward higher student and faculty attendance at the Spring meetings, continue the great student participation in giving talks, encourage the involvement of high school teachers in the Section's activities, and continue the Short Course in some way**.**

Tommy Ratliff, Wheaton College

Tommy Ratliff is an Associate Professor at Wheaton College. Before arriving at Wheaton in 1996, he held visiting positions at Kenyon College in Ohio and St. Olaf College in Minnesota. He did his graduate work at Northwestern University in algebraic topology, but his current area of research is voting theory. He was a participant in the first group of Project NExT Fellows (1994-1995), and is co-author with Annalisa Crannell, Gavin LaRose, and Elyn Rykken of "Writing Projects for Mathematics Courses: Crushed Clowns, Cars, and Coffee to Go" recently published by the MAA. He has served on several program committees for NES/MAA meetings and has organized the contributed papers sessions at the NES/MAA meetings since Fall 2000.

Secretary-Treasurer:

Ann Kizanis, Western New England College

Ann Kizanis graduated with a B.A. in Mathematics from Connecticut College in 1985. During her time there, she received the Julia Welles Bower Prize for Excellence in Mathematics each year. She also received the Rosemary Park Fellowship for Teaching in 1985 and was named a Winthrop Scholar. She did her graduate work at Wesleyan University in the area of archimedean lattice-ordered groups and graduated with a Ph.D. in 1991. She then began working as an Assistant Professor of Mathematics at Western New England College. She was granted tenure in 1995, was promoted to Associate Professor in 1996, and was promoted to Professor in 2004. While at Western New England College, she received the Teaching Excellence Award in 1995, as well as the Golden Bear Award, given in recognition of unselfish commitment to the student body at the college. Two years ago, Ann accepted the position of Associate Dean of the School of Arts and Sciences at the college. Ann has had papers published in her area of interest, epicompletions of archimean lattice-ordered groups, and submitted a joint paper for publication last fall. She was on sabbatical this academic year and continues to work with her former thesis advisor at Wesleyan University. Ann has been a member of the Mathematical Association of America since graduate school. She was a member of the Program Committee for the Fall Meeting of the NES/MAA that was held at Western New England College in 1997 and was also Publisher Liaison for the Spring Meetings in 1995, 1996. She has served as Secretary/Treasurer of the Northeastern Section of the Mathematical Association of America for the last four years. Ann has learned a great deal during this time and enjoys working and interacting with members of the northeastern section. She hopes to continue to serve the section and become further involved in MAA activities in the future**.**

Two Year College Representative:

June Decker, Three Rivers Community College

June Decker is currently an instructor of mathematics at Three Rivers Community College. She is interested in teaching mathematics in context. In the past she has taught at the Pomfret School, Coventry High School and at the University of Connecticut. She holds an AB from Harvard College and an MS from the University of Connecticut and

has completed the graduate certification program in Secondary Mathematics at Central Connecticut State University. She holds a professional educator's certificate from the state of Connecticut for grades 7-12 mathematics. She was a PIMMS Fellow (Project to Increase Mastery in Mathematics and Science) at Wesleyan University's Math technology Institute in 1995 and 1996. As a teacher at the Pomfret School she was the coach of the winning Pomfret Math Team that consistently placed in the top three in state and New England invitational competitions. She is a member of the MAA, the American Mathematics Association of Two Year Colleges (AMATYC) and its Connecticut affiliate (MATYCONN) as well as of the NCTM.

Lois Martin, Massasoit Community College

Lois Martin is a professor of Mathematics at Massasoit Community College, where she has taught since 1978. She has a B.S. (Mathematics) from the University of Massachusetts at Amherst and an M.A.T. (Mathematics) from Bridgewater State College. She is active in both the New England Mathematical Association of Two-Year Colleges (NEMATYC) and the American Mathematical Association of Two-Year Colleges (AMATYC) and has given presentations at conferences for both organizations. Currently the NEMATYC treasurer, she also acted as local treasurer for two NEMATYC conferences. She served a three-year term on AMATYC's Program Committee and has been a delegate at AMATYC conferences for several years. Professor Martin is a longtime member of MAA, was a member of a CUPM Focus Group at Mathfest 2002, and represented the two-year colleges on the NES/MAA Nominating Committee in 2002 and on the Teaching Award Selection Committee in 2004. At Massasoit Community College she has served as Mathematics Department Chair and Academic Senate President, and she has received the NISOD Award for Teaching Excellence and the Governor's Pride in Performance Award.

Tribute to Howard Eves.....Clayton Dodge/ Cindy Eves-Thomas

(**Editor's Note:** Clayton Dodge sent me the following information on the death of Howard Eves, Professor Emeritus of the University of Maine. Howard Eves died on June 6th after a long illness. Howard Eves was the founder of our Section and the Northeastern Section dedicated a room to him at the MAA Headquarters in Washington as well as naming the Section's Service Award after him. His daughter wrote the following obituary.)

HOWARD W. EVES, Ph.D., UM Professor Emeritus
LUBEC - Howard W. Eves, 93, husband of Diane L. Eves, died June 6, 2004, after a long illness. He was born January 10, 1911, in New Jersey. Howard received a BS in mathematics from the University of Virginia, MA from Harvard University, PhD from Oregon State University, and attended the Institute of Advanced Study at Princeton University. He enjoyed a long, distinguished career as a teacher, geometer, writer, editor and historian of mathematics. He served as associate editor of various journals. His many awards included a Distinguished Teaching Award from the State of Maine, honorary doctorates from the University of Maine and McDaniel College, and the George Polya Award for mathematical writing. A world renowned teacher and scholar, Howard spent most of his career at the University of Maine, Orono and Machias, and more recently at Central Florida University. For 25 years he edited the Elementary Problems Section of the American Mathematical Monthly. He was the author of numerous mathematics articles and books, including An Introduction to the History of Mathematics, considered

the most widely used text in courses in the history of mathematics. Howard was also an avid watercolorist.

He is survived by his wife, Diane; four sons, Kevin Eves, of California, Jamie Eves and wife Katherine, of Connecticut, Timothy Eves and wife Luba, of Connecticut, Roderick Eves and wife Cheryl, of Colorado; two daughters, Cindy Eves-Thomas and husband Robert, of Maine, Tammy Jordan and husband Jeffrey, of New Hampshire; 7 grandchildren and several great-grandchildren.

(**Editor's note:** The following additional information on the career of Howard Eves is also from Cindy Eves-Thomas.)

Taught at 10 colleges and universities, including University of Maine, Professor of Mathematics, 1954-1976; University of Maine at Machias, Adjunct Professor of Mathematics, 1976-1977; and University of Maine at Machias Elderhostal Program, Summers 1980-85

Wrote more than 20 books, most notably An Introduction to the History of Mathematics and six "Circle Books": In Mathematical Circles, Mathematical Circles Revisited (2 volumes), Mathematical Circles Squared, Mathematical Circles Adieu, and Return to Mathematical Circles.

Wrote more than 100 articles in mathematics, physics, engineering and pedagogical journals.

Contributed articles to three major encyclopedias (Encyclopedia Americana, Collier's Encyclopedia, and World Book Encyclopedia).

Served as editor of the Elementary Problem Section of the American Mathematical Monthly (25 years), editor of the Historically Speaking Section of The Mathematics Teacher, and associate editor for the following journals: American Mathematical Monthly, Mathematics Magazine, Mathematics Teacher, Two Year College Mathematics Journal, and Fibonacci Quarterly.

Delivered lectures in 49 states.

Published more than 300 solutions to problems proposed in mathematical journals.

Honorary Societies: Pi Mu Epsilon (mathematics honorary), Sigma Xi (research honorary), Phi Kappa Phi (scholarship honorary), Kappa Alpha (art honorary), Mark Twain Society (writers honorary) and Sigma Delta Zeta (mathematic honorary).

Awards:
-Oregon State University Loyd Carter Award for Outstanding and Inspirational Teaching, 1950
-Outstanding Educators of America Award, 1971

-Distinguished Scholar Award, 1980
-Distinguished Achievement Award (for contributions to the State of Maine and the University of Maine), 1979
-Interfraternity and Panhellenic Distinguished Faculty Award, University of Maine, 1969
-Mathematics Association of America Recognition Award, 1975 (a room has been named the Howard Eves Room)
-University of Hartford Recognition Award, 1979
-In 1990 the Northeastern Section of the Mathematical Association of America set up an award called the Howard Eves Award for Meritorious Services. The first recipient of the award was Howard Eves, who founded the Section

Professional Societies: Mathematical Association of America, American Mathematical Society, French Mathematical Society, and National Council of Teachers of Mathematics

(**Editor's note:** The following additional tribute was added by Clayton Dodge, Retired professor of the University of Maine and friend of Howard Eves and organizer of the Northteast Section's Short Course for many years.)

More information about the life and career of Howard Eves is available in Mathematical Reminiscences by Howard Eves (The Mathematical Association of America, 2001), including a chapter about UMaine's Neville Hall ("Mathemetizing the New Mathematics Building"), a tribute to friend Dr. Clayton Dodge, retired UM professor, and several chapters about Howard Eves' friendship with Albert Einstein while at Princeton's Institute for Advanced Study in 1936-37.

His six volume Mathematical Circles series of humorous and interesting anecdotes about mathematicians was recently reprinted by the Mathematical Association of America, who also published his two volumes of Great Moments in the History of Mathematics. In 1997 Dover reprinted his Foundations and Fundamental Concepts of Mathematics. His two volume Survey of Geometry was first published by Allyn & Bacon in 1963 and has been reprinted in several abridged versions. These are but a sampling of the many books by Howard Eves that should reside on every mathematician's bookshelf. While at Princeton, he became friends with Albert Einstein, who once pointed to an aster growing in a crack in the sidewalk and remarked, "Bloom where you are planted." His MMM (My Mathematical Museum) contained a nickel that Einstein had owned and a pencil Oswald Veblen had dropped, among hundreds of other interesting curiosities. He was a strong spokesman for the MAA and a founder if its Northeast Section. More importantly, he was a great humanitarian. Quietly and without fanfare or expectation of reward, he helped many people in need, going far beyond the call of duty. It is, therefore, most appropriate that his honorary degree from the University of Maine was a Doctorate of Humane Letters. His comment on that degree was equally modest: "They must have seen me patting a dog."

Tribute to Richard Sampson .....David Haines

(Editor's note: By way of Sarah Mabrouk, I received the following tribute to Richard Sampson, retired professor of Mathematics from Bates College, who died recently. The

tribute was written by David Haines who is also from the Mathematics Department at Bates College on October 21.)

Any mathematician who in the last half of the Twentieth Century attended more than a few meetings of the Northeast Section of the MAA couldn't avoid getting to know Richard Sampson. A graduate of the Bowdoin class of 1944, with additional degrees from Boston University and Tufts, Richard taught for 38 years at Bates. After his retirement in 1990 he taught at Northeastern University and at the University of Southern Maine. Richard's mathematical roots were in New England and few New England mathematicians didn't know him.

Richard delighted in mathematics and the society of mathematicians. He always was working on a problem. Often he would crash into my office uninvited, put his problem on the blackboard and, despite my attempts to ignore him, tell me to help him. He usually succeeded in drawing me into an hour-long session of what he knew we both enjoyed more than anything else, mathematics. I once saw this happen on a plane full of mathematicians. Richard, struggling with a problem, couldn't keep the challenge to himself and began pacing up and down the aisle accosting other mathematicians, several of whom soon clustered intently around us, to the annoyance of the flight attendants trying to get us ready to land.

Attending the Annual Meetings with Richard was an event. He seemed to know everybody. Many of the famous mathematicians of his generation greeted him by name; however Richard proudly refused to acknowledge those he deemed too arrogant. But he made a special effort to befriend the tiny handful of African-American mathematicians at that time.

Richard saw mathematics everywhere. He couldn't discuss velocity without telling about flying into hurricanes to measure wind speed. ("Damn, it was noisy when the plane got hit by lightning!") He loved to tell about throwing dry ice out of an airplane to punch holes in a cloud so his colleagues on the ground could estimate the velocity of the cloud. He used to describe using the Mean Value Theorem in the jungles of British Guyana: To compute the average temperature over the last 24 hours he cut along the temperature recorded by a pen on a piece of uniform density paper and then weighed it.

Richard was revered as a teacher, but had little use for student course evaluations and even less for faculty who tolerated misbehavior from their students. Bates Faculty were accustomed to Richard's screams of "Damn!" from the third floor classroom, followed by the clatter of chalk and erasers being hurled at the student who dared to sleep while he was teaching. Richard developed and taught his own course in geometry, an area close to his heart. He was also a sailor and created a course in celestial navigation, in which students went out on the campus and used astrolabes, compasses, and sextants to transport themselves around an imaginary world.

Richard's students, his colleagues, and the Northeast Section have all benefited from Richard's infectious enthusiasm for mathematics. He will be missed.

Memorial contributions in Richard's name may be made to the Richard W. Sampson

Mathematics Lecture, Office of College Advancement, Bates College, Lewiston, Maine 04240.

From the Colleges:

Boston University (Emma Previato): BU has a new tenure-track faculty member, Richard Pollack who specializes in Number Theory. **Emma Previato** will be directed two undergraduate symposia last spring and the web sites are still available. For the African-American Mathematics: Successes and Challenges (February 2004) symposium, see http://math.bu.edu/people/ep/AFRAMATH/ and for the Research by Undergraduates in Mathematics Boston University (RUMBUS 2004), see http://math.bu.edu/people/ep/RUMBUS04/. Also, BU is a partner in the Focus on Mathematics program (see http://focusonmath.org/). This is a $10 million NSF grant for a training program for math teachers and involves high schools in the Boston area, WPI, Lesley University, and UMass-Lowell as well as BU. Finally, the web section "News" on the site http://math.bu.edu/ contains news of BU's students. At the moment, it contains articles on Grad student Karen Yeats winning the Morgan Prize in Phoenix, Undergraduate Michael Coleman receiving a Joint Mathematics Meeting Poster Award, the Focus on Mathematics Program launching, and Prof. **Bob Devaney** winning the Metcalf Award.

Bowdoin College (Jim Ward): Bowdoin has lost one (temporarily) and gained one: Associate Professor **Adam B. Levy** has been appointed as an associate dean of academic affairs (for three years), and **Mark J. Rhodes** has arrived this fall as a Visiting Assistant Professor.

Framingham State College, MA (Sarah Mabrouk) : Joyce Cutler was awarded tenure effective September 1, 2003. **Sarah Mabrouk** was awarded tenure effective September 1, 2004. **Thomas Koshy**'s text "Fibonacci and Lucas Numbers with Applications", published in August 2001, won the Association of 2001 American Publishers Best New Book in Mathematics and Statistics Award. Tom's new book "Discrete Mathematics and Applications" was published in December 2003 and is dedicated in memory of Kenneth J. Preskenis. We have established a scholarship in memory of **Kenneth J. Preskenis** who taught at Framingham State College for over twenty-five years. Please contact **Thomas Koshy**, the Chair of the Kenneth J. Preskenis Scholarship Committee, or any member of the Committee, **Joyce Cutler**, **Walter Czarnec**, or **Sarah Mabrouk**, if you would like more information about the Preskenis Scholarship or if you would like to make a contribution to the scholarship fund.

Keene State College, NH (Ockle Johnson): **Dick Jardine** was awarded tenure. **Karen Stanish** had a baby girl, Michelle Elizabeth, in July.

Massachusetts Maritime Academy (Frank Battles): Professor **Eugene McCarthy** retired after teaching mathematics at the Academy since 1982. Prior to coming here, he had taught at Boston State College for many years. Dr**. Muge Kanuni**, who came to the Academy after completng her Ph.D. at UConn, left us

to return to Turkey. Dr**. Raul Aguilar** joined the faculty here this fall. He had previously taught at Rhode Island College.

Plymouth State College, NH (Ted Giebutowski): **Paul Estes** retired in June, and **Ted Giebowski** will retire in December

St. Michael's College (George Ashline): One major news item for the SMC mathematics department is that in conjunction with our college's Centennial, we sponsored a Mathematics Department Centennial Celebration on 9/25/04. The celebratory events included a lecture by **Brian Adams**, '99 (currently a Ph.D. candidate at North Carolina State) on "Using Mathematics to Explore HIV Treatment Strategies, Smart Materials, and More", induction of new members into our Pi Mu Epsilon chapter, and a panel on "Careers in Mathematics" in which eight of our alumni participated. For the event, we also created and distributed a timeline highlighting the evolution of the department, and exhibited several posters detailing student/faculty research efforts.

Salem State College, MA (Mary Platt): The Mathematics Department is offering a new program: Master of Arts in Teaching- Middle School Mathematics. This 39 credit hour program will serve middle school teachers who already have an appropriate provisional certification with advanced standing or initial license, and who wish to complete a master's degree program to become eligible to apply for professional licensure. See the web site http://www.salemstate.edu/math/grad/msm.pdf for more information

Yale University (George Seligman): As of Jan. 1, 2004, we experienced four senior retirements: **Richard Beals, Walter Feit, Benoit Mandelbrot, Ilya Piatetski-Shapiro. Walter Feit**'s retirement, sadly, was followed by his death, July 29. **Shizuo Kakutani.** who retired in 1981, died on August 17, 2004. There are no new senior appointments to report, although a number of offers are or have been in the works. Senior visitors/adjunct professors include **Steven Gelbart (to 11/15/04), David Spielman (academic year)/ Michael Frame, Alex Lubotsky (spring term), Gil Kalai (fall), David Sattinger. New Gibbs Assistant Professors are: Baris Coskunuzer, Alma Marian, Jose Rodrigo**. For the first time, the Department has used an online placement test for placement of freshmen in the calculus sequence. One of the optional answers amounted to "I don't know how to answer this question." Students could take the test before arriving on campus, but in any case before classes began. In addition to placement, the test served to identify students who might benefit from extra tutoring from the very start. One interesting outcome has been that the number of freshmen starting with third-semester calculus has fallen, while second-semester calculus has grown. Early test results from the third-semester course show a marked improvement over last year. The testing program was devised by **Michael Frame and Roger Howe**, and more information could be gotten from either of them. (Roger Howe is on leave this fall, so perhaps it might be better to contact Michael Frame.)

NES/MAA Award for Distinguished College/University Teaching of Mathematics.....Ockle Johnson

There is no packet of forms to fill out in order to make nominations for the 2005 Northeastern Section of the Mathematical Association of America (NES/MAA) Award for Distinguished College or University Teaching of Mathematics: you create the nomination packet with various letters written by those familiar with the candidate's teaching/research/publications. The eligibility and nomination requirements as well as some hyperlinks to help you in creating the nomination packet are listed below.

The eligibility requirements are

- college or university teachers who currently teach a mathematical science at least half-time during the academic year in a public or private college or university in the United States or Canada (those on approved leave (sabbatical or other) during the academic year in which they are nominated qualify if they fulfilled the requirements in the previous year),
- at least five years experience in teaching a mathematical science, and
- has membership in the Mathematical Association of America and is teaching in the Northeastern Section,

and the nomination requirements,

- widely recognized as extraordinarily successful in his/her teaching,
- has teaching effectiveness that can be documented,
- has influence in teaching beyond his/her own institution, and
- fosters curiosity and generates excitement about mathematics in students.

Nominations for the *2005 NES/MAA Award for Distinguished College of University Teaching of Mathematics* are due by **January 15, 2005,** and the winner of the Section's award for distinguished teaching is then nominated for the Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics. General information for the distinguished teaching as well as a list of past recipients of the award can be found on the Sections Awards page of the NES/MAA web site, http://www.southernct.edu/organizations/nesmaa/sectionawards.html; more detailed information about the Section award, eligibility, and nomination process can be found on the MAA website, http://www.maa.org/Awards/CFN_Template.html. Information about the nomination process as well as about the National award can be found on the MAA website,

- http://www.maa.org/Awards/teachingawards.htm
- http://www.maa.org/Awards/Haimo_EGN.pdf (general guidelines/eligibility information)
- http://www.maa.org/Awards/Haimo_NF.pdf (Nomination Form).

The *typed* completed Nomination Form must accompany the nomination packet that you create and nominations should include no more than five letters of recommendation of no more than one page each,

- two letters from present or former students
- two letters from colleagues one of whom could be the department chair, and
- one additional letter from anyone qualified to comment on extraordinary teaching success.

In addition to these letters, the nomination should include a narrative describing the nominee's background, experience, teaching style, special contributions, other teaching awards, evidence of unusual/extraordinary achievement/success in teaching; this narrative should be no more than five double spaced pages. Additional documentation on the nominee's teaching success including but not limited to summaries of peer or student teaching evaluations, comments on teaching, possible increases in the number of undergraduate/graduate degrees in mathematics directly related to the nominee, and student successes in mathematics competitions may be included on no more than three additional pages.

The Nomination Form, http://www.maa.org/Awards/Haimo_NF.pdf contains a note that states that "if the nomination packet significantly exceeds the prescribed limits" then "it will not be eligible for consideration for a national award." Since the nomination packet for the Section award will be forwarded to MAA for consideration for the National award, it is important to consider this caution and not exceed "the prescribed limits."

Once you have compiled the information and letters for the nomination packet, please send the completed packet to Ockle Johnson at Keene State College before the ***January 15, 2005*** deadline. Once you have mailed the packet to
Ockle Johnson
Keene State College
Mathematics Department
Keene, NH 03435-0001,
please call him, (603) 358-2585, or email him, ojohnson@keene.edu, to confirm the receipt of the nomination packet. The nomination process will not be complete until you have received confirmation that the completed nomination packet has been received.

Northeastern Section NExT at Fall Meeting……Lisa Humphreys

The Northeastern Section is continuing a Section NExT program for new and relatively new colleagues at this year's Fall Meeting. 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.

10:00-10:15 Registration of prospective Section NExT fellows and preliminary information.

10:15-11:15 ***MS Excel Like You Have Never Seen It***, by Prof. Sarah Mabrouk of Framingham State College. Prof. Mabrouk who is the current chair of the Northeast Section of the MAA, will show how she uses Excel to enhance the instruction of mathematics. Come learn about the classroom tool that you never knew.

11:15-11:45 **Discussion of future programs**

11:45-12:45 **Lunch**

1:00-2:00 ***Intuitive Eigenvalues***, by Prof. Joe McKenna of The University of Connecticut. Prof. McKenna is this years NES/MAA Distinguished Teacher recipient. He will show how to understand and predict eigenvalues based on the response of a mechanical system.

3:00 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.

Calls for Participation at Fall Meeting

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 Raimundo Kovac , RKovac@ric.edu . The deadline for submission is Nov. 5.

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 Nov. 1.

Northeastern Section of the MAA
Northeastern Fall Sectional Meeting

Confernce Committee:

Program Committee Chair, Suzanne L. Weekes, WPI
Local Arrangements Chair, Brigitte Servatius, WPI
Bogdan Vernescu, WPI
Peter Christopher, WPI

Friday, November 19, 2004

2:00 - 6:00 **Registration (3rd Floor WPI Campus Center)**
2:00 - 3:00 **Executive Committee Meeting, Mid Century Room, Campus Center**
3:00 - 4:00 **Workshop/Panel: Careers in Industry, Olin Hall 126**
3:00 - 4:00 ***Quantum mechanics and combinatorial designs*** **, Olin Hall 107**
P. K. Aravind , Worcester Polytechnic Institute
4:00 - 5:00 **Student Paper Sessions, Olin Hall 214 and**
5:00 - 6:00 **DISTINGUISHED TEACHER LECTURE, Olin Hall 107**
On Teaching Differential Equations... **, Joseph McKenna, University of Connecticut**
6:00 - 6:30 **Reception, Higgins House**
6:30 - 8:00 **Banquet, Higgins House**
8:00 - 9:00 **CHRISTIE LECTURE, Olin Hall 107**
Elliptic Curves, The Silver Bullets of Modern Mathematics
Ezra 'Bud' Brown, Virginia Polytechnic Institute

Saturday, November 20, 2004

8:00 - noon **Registration (3rd floor WPI Campus Center)**
8:00 - 9:00 **New Colleagues Presentations, Olin Hall 214 and 218**
9:00 - 10:00 **Graduate Student Presentations, Olin Hall 214 and 218**
10:00 - 10:30 **Graduate Reception, Mid Century Room**
10:00 – 10:30 **Break**
10:30 - 11:30 **POLYA LECTURER, Olin 107**
Alternating Sign Matrices**,**
David Bressoud, Macalester College
11:30 - 12:00 **BUSINESS MEETING AND ELECTION OF OFFICERS, Olin 107**
12:00 - 1:00 **Lunch, Campus Center**
1:00 - 2:00 ***Counting on Determinants*****, Olin Hall 217**
Arthur Benjamin, Harvey Mudd College
2:00 - 3:00 ***Folding Robot Arms, Proteins, Origami: ...*****, Olin Hall 223**
Ileana Streinu, Smith College
2:00 -3:00 **Workshop:: CUPM Curriculum Guide 2004, Olin Hall 218**

	David Bressoud
3:00 - 4:00	**Workshop: Industrial Math for Undergrads, Olin Hall 126**
	A. Heinricher & S. L. Weekes,
3:00 -4:00	***Spherical Codes, Fullerenes, ...*** **, Olin Hall 107**
	Jack Graver - Olin Hall 107
4:30 - 5:30	**Contributed Presentations, Olin Hall 214 and 218**

Abstracts / Speakers

Quantum mechanics and combinatorial

P. K. Aravind , Worcester Polytechnic Institute

Abstract

Recent proofs of Bell's theorem in the foundations of quantum mechanics have led into some unexpected areas of discrete mathematics such as regular polytopes, projective configurations and combinatorial designs. In particular, this work has led to the emergence of the concept of a "quantum block design" that is a generalization of the balanced incomplete block design known to experts in combinatorics and statistical design. The purpose of this talk is to expose this connection between quantum mechanics and combinatorial mathematics for the benefit of mathematicians who know next to nothing about quantum mechanics. This will be done by focusing on a particular example that illustrates this connection in detail rather than by dwelling on abstract generalizations. Having done this, I will discuss some open questions connected with quantum block designs that mathematicians may feel inclined to address. The possible physical applications of quantum block designs will also be touched upon.

Biography

P.K.Aravind received his B.Sc and M.Sc degrees from Delhi University in Delhi, India. He received his Ph.D degree in theoretical physics from Northwestern University and then held research positions at the University of California at Santa Barbara and the University of Wisconsin-Madison. He joined WPI in 1984 and is currently a professor in the Department of Physics. His research over the years has spanned the areas of condensed matter physics, surface physics, quantum optics, Bell's theorem and the foundations of quantum mechanics, and quantum information theory. He has taught for many years in WPI's FRONTIERS program, a summer program designed to draw more high school students into science, mathematics and engineering.

Counting on Determinants
Arthur Benjamin, Harvey Mudd College
Abstract
We demonstrate how determinants solve many interesting combinatorial problems. Determinants count nonintersecting lattice paths, spanning trees, and permutations with specified descent points. Elegant proofs of these results are based on the definition of the determinant and occasionally the principle of inclusion-exclusion. Applications to Pascal's Triangle, Fibonacci numbers and Catalan numbers will also be given. This talk is based on joint work with Naomi Cameron of Occidental College. Folding Robot Arms, Proteins, Origami: a Combinatorial Approach
Biography
Arthur Benjamin earned his B.S. in Applied Mathematics from Carnegie Mellon and his PhD in Mathematical Sciences from Johns Hopkins. Since 1989, he has taught at Harvey Mudd College, where he is Professor of Mathematics and past Chair. In 2000, he received the Haimo Award for Distinguished Teaching by the Mathematical Association of America. His research interests include game theory and combinatorics, with a special fondness for Fibonacci numbers. He recently co-authored (with Jennifer Quinn) "Proofs That Really Count: The Art of Combinatorial Proof", published by MAA. Professors Benjamin and Quinn are the co-editors of Math Horizons magazine, published by MAA, read by more than 20,000 math students in the nation. Art is also a magician who performs his mixture of math and magic to audiences all over the world, including the Magic Castle in Hollywood. He is currently on sabbatical at Brandeis University.

***Alternating Sign Matrices*,**
David Bressoud, Macalester
Abstract
This will be an overview of what is known and what is conjectured about Alternating Sign Matrices, a combinatorial structure with ties to partition theory, representation theory, and statistical mechanics. The talk will include an overview of the story of the Alternating Sign Matrix Conjecture, a tale that begins with a Lewis Carroll algorithm for evaluating determinants and ends with Kuperberg's realization that the 6-vertex model of Izergin and Korepin held the key to the solution.
Workshop:: CUPM Curriculum Guide 2004, Olin Hall 218
The MAA Committee on the Undergraduate Program in Mathematics (CUPM) updates its recommendation for the undergraduate curriculum in mathematics roughly every ten years. The most recent and the most extensive set of recommendations ever produced by the CUPM was published in February: CUPM Curriculum Guide 2004. This is the first CUPM curriculum guide to look at all mathematics courses and the needs of all students taking

mathematics rather than dealing solely with the preparation of majors in the mathematical sciences. This workshop will explain what can be found in this guide and how it can be used

Biography

David Bressoud is DeWitt Wallace Professor of Mathematics at Macalester College in St. Paul, Minnesota. He was a Peace Corps Volunteer in Antigua, West Indies (1971-73), received his Ph.D. (1977) from Temple University where he studied with Emil Grosswald. He taught at Penn State from 1977 to 1994, becoming a full professor in 1986. He has held visiting positions at the Institute for Advanced Study (1979-80), University of Wisconsin (1980-81 & 1982), University of Minnesota (1983 & 1998), and the University of Strasbourg (1984-85). He has received the MAA Distinguished Teaching Award and the MAA's Beckenbach Book Award for *Proofs and Confirmations: The Story of the Alternating Sign Matrix Conjecture*. He has published over fifty research articles in number theory, combinatorics, and special functions, and his other books include *Factorization and Primality Testing* (1989), *Second Year Calculus from Celestial Mechanics to Special Relativity* (1991), *A Radical Approach to Real Analysis* (1994), and, with Stan Wagon, *A Course in Computational Number Theory* (2000). He currently serves as Chair of the College Board's AP Calculus Development Committee, Chair of the MAA's Committee on the Undergraduate Program in Mathematics, and as Director of Macalester's FIPSE and NSF-sponsored program "Quantitative Methods for Public Policy."

Elliptic Curves, The Silver Bullets of Modern Mathematics

Ezra 'Bud' Brown, Virginia Polytechnic Institute

Abstract

Elliptic curves made their first appearance seventeen centuries ago and are among the most beautiful objects in mathematics --- and the most useful. This talk will be about elliptic curves and their connections to such things as: Doughnuts and 49/20 ; A page from Diophantus; Magic squares, finite geometries and inflection points ; Congruent numbers and other diophantine problems ; Fermat's Last Theorem; Factoring Large Primes; Chocolate-Key Cryptography. A talk on all of these would run for days, so the audience will choose the topics to be presented.

Biography

Ezra (Bud) Brown grew up in New Orleans, has degrees from Rice and LSU, and professes mathematics at Virginia Tech, where he has been since 1969. The elliptic curve bug first bit him while he was in graduate school and has never really gone away. Although most of his research has been in number theory and combinatorics, he once wrote a paper

with a sociologist. He has received the MAA's Allendoerfer Award, the Polya Award (twice), and the MD-DC-VA Section's teaching award. He enjoys singing in operas, playing jazz piano, gardening, and talking about his granddaughter Phoebe Rose. He occasionally bakes biscuits for his students.

Spherical Codes, Fullerenes
Jack Graver
Abstract
Spherical Codes (maximum families of non overlapping identical spherical caps on a sphere), Fullerenes (large carbon molecules) and the structures of solutions to the problems of Thomson (minimize the potential of n unit charged particles on the sphere) and Tammes (distribute n points on the sphere to maximize the minimum distance between them) all give rise to large planar graphs. This talk is about the structures of these graphs and the relationships between the graphs that arise from different problems.
Biography
Jack Graver grew up in Cincinnati, Ohio. He earned his bachelors degree from Miami of Ohio; his masters and doctorate from Indiana University. After two years at Dartmouth College as a John Wesley Research Instructor, he came to Syracuse where he has been for 35 years. He has published research papers in design theory, integer and linear programming and in several different areas in graph theory. He has authored or coauthored four books: two graduate level texts and two elementary level books one on rigidity theory and one on group theory and graph theory for students of architecture. In 1957 he joined the MAA and, during the 38 years he has been in the Seaway Section, he has held many offices including section chair and section governor. In 1993 he was awarded a Certificate of Meritorious Service by the MAA. He is also a long time member of the AMS, SIAM, NCTM and AMTNYS (Assoc. of Math. Teachers of New York State). Starting in the early 60s, he has taught a variety of summer workshops for high school teachers; in Indiana, New York, the Virgin Islands and England. It is an activity that he continues to find particularly satisfying.

On Teaching Differential Equations... ,
Joseph McKenna, University of Connecticut
Abstract
I taught my first course in differential equations thirty years ago. It was a basic cookbook course and I just followed the textbook slavishly, often barely grasping what I was teaching. Here, I will describe some of the things I've learned since I started.
Biography

Joe McKenna got his B.Sc. from U.C.D. in Dublin and his Ph.D. from the University of Michigan with Lamberto Cesari in 1976. Since then, he has been professor of mathematics at the universities of Wyoming, Florida and (currently) Connecticut. He was also Professor of Applied Mathematics at U.C.C. in Cork from 1999-2000. His mathematical interests are all manner of nonlinear differential equations, ordinary and partial, especially existence and multiplicity properties, their numerical solution, and applications to vibrations in bridges and ships. Other distinctions include the University of Connecticut Chancellor's Award for Excellence in Research. He is indentified at www.isihighlycited.com as one of the highly cited researchers in the mathematical sciences. Nonmathematical interests include theater and opera, cooking, history, and detective novels.

***Folding Robot Arms, Proteins, Origami: ...*,**

Ileana Streinu, Smith College

Abstract

Robot arms can be modeled as simple polygonal chains with rigid bars and rotating joints. Planning non-colliding motions between two configurations of a robot arm is a notoriously hard problem, for which the currently known best algorithms run in exponential time. An efficient solution in dimension 3 could have an impact in understanding apparently unrelated questions, such as how proteins fold. In this talk I will present a surprisingly simple combinatorial solution to the 2-dimensional version. The Carpenter's Rule Problem, "Can every planar polygonal chain be convexified with non-colliding planar motions?" was open since the '70. It was answered in the affirmative in the early 2000, and my contribution - the subject of this talk - was to give an efficient algorithmic solution. I will present it with a lot of graphical props: animations, games, even some 3d-graphics. Along the way, we'll use tools ranging from a 19th century theorem of J. Clerk Maxwell to graph embeddings, oriented matroids, combinatorial rigidity theory and visibility computations in Computational Geometry. I will conclude with some algorithmic insights into origami folding induced by this approach.

Biography

Ileana Streinu earned her B.S., M.S., and Doctorate degrees in Mathematics and Computer Science from the University of Bucharest. She received her Ph.D. in Computer Science from Rutgers University. She has taught at Smith College since 1994 and is now a full professor of Computer Science. Her research interests are in combinatorial and computational geometry and applications in computational molecular biology, computer graphics, robotics, graph drawing, computation statistics and data visualization.

About Worcester Polytechnic Institute
(from the WPI web site)

Worcester Polytechnic Institute is a university like no other. From our founding days, we've taken a different approach to technological education. **We believe that the best way to learn is by doing.** Our students get a firm grounding in science and technology. Then they learn to apply their knowledge by tackling real problems. Working in teams, at sites around the globe, they develop solutions that truly make a difference.

Theory and practice. Technological solutions that make the world better. A curriculum that prepares students exquisitely well for life and work in our technological world. That's WPI's heritage, and it's what sets us apart from other colleges and universities.

Here are five other big ideas that add up to the WPI Difference:

1. A History of Leading the Way in Higher Education
2. More Than 135 Years of Breakthroughs That Have Changed the World
3. Students Whose Vision Extends Beyond Science and Technology
4. A Curriculum That Engages Students in Society – and the World
5. Researchers Who Are Opening Up New Frontiers of Knowledge

Hotel Information

A block of rooms are being held at

- Courtyard Marriott 1-800-321-2211 ($99 + tax)
- Crowne Plaza hotel 1-800-628-4240 ($104 + tax)

for meeting participants until November 5th, 2004. These double rooms are being offered to us at the above rates of for the Friday and/or Saturday night(s) of the meeting. Reservations should be made directly with the hotel and participants should say that they are with the WPI/MAA group.

Directions

Worcester Campus
100 Institute Road
Worcester, MA 01609-2280

From the East

Take Mass. Turnpike (I-90) to **Exit 11A** (I-495). Proceed north to I-290, then west into Worcester. Take **Exit 18** (Lincoln Sq., Rte. 9), turn right at end of ramp, then an immediate right before next traffic light. At next light, proceed straight through, bearing to the right on Salisbury St.* At the WPI sign, turn left onto Boynton St., then right onto Institute Rd. Take your first right (Private Way); visitor parking is on the left after the footbridge.

From the North

Take I-495 south to I-290. Follow directions from east.

From the South and West

Take Mass. Turnpike (I-90) to **Exit 10** (Auburn). Proceed east on I-290 into Worcester. Take **Exit 17** (Lincoln Sq., Rte. 9), turn left at end of ramp, follow Rte. 9 west through Lincoln Sq., straight onto Highland St.,** then right at light onto West St. Travel one block and cross Institute Road (onto Private Way); visitor parking is on the left after the footbridge

PRE-REGISTRATION FORM

Name:

Affiliation:

E-mail: **Telephone:**

Address:

Please check one of the following:

___Four-year college faculty ___Two-year college faculty

___High school faculty/administrator: ___Business/Industry/Government

___Retired ___Graduate Student ___Undergraduate Graduate

___Unemployed

Please check: Male ___ Female ___

Pre-registration Fee:

MAA Member ($25)

Non-member ($30)

Student or unemployed ($10)

Meals:

Friday Banquet ($30 per person)

____ x $30 =

Choose entrees:

__ x Beef _ x Fish _ x Vegetarian

Saturday Luncheon ($18 per person)

____ x $18 =

Total Payment: _____

Will you attend Project NExT? Yes_ No _

Mail form and payment by Monday 1 November,

to the Program Committee Chair:

Prof. Suzanne L. Weekes - NES/MAA

Department of Mathematical Sciences

Worcester Polytechnic Institute

100 Institute Road

Worcester, MA 01609

Checks should be payable to: NES/MAA

Frank Ford
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