Our Fall meeting, October 10 - 11, will be hosted by Alfred University.

Alfred University is a small comprehensive university, with about 2000 undergraduates, and about 300 graduate students. Alfred's program is grounded in the arts and sciences. It is well known for its programs in ceramic art and ceramic engineering. It also has a strong astronomy program, and boasts a seven-telescope observatory, the Stull Observatory, which has one of the largest optical telescopes in New York State. And in case you are wondering why all the telephone numbers on campus begin 871, it is of course because Alfred the Great succeeded his brother Ethelred as king of Wessex and Mercia in precisely the year 871. (Source: Wikipedia)

Thank you Alfred University for hosting our meeting!

Meeting Highlights

The banquet speaker is Applied Mathematician and Sculptor, George Hart, professor in the Engineering department at Stony Brook University. His topic is *Math is Cool!* Hart is co-founder of museum of Mathematics in New York City, and designer of many of the original displays in that museum. Professor Hart will share some of his artwork, videos, and workshop ideas.

The first invited speaker on Saturday morning is Joel Foisy, SUNY Potsdam. He will present A *Survey of Intrinsically Linked and Intrinsically Knotted Graphs.* This will included known results and open questions. Foisy has for 16 summers been involved with the SUNY Potsdam - Clarkson University REU, and has worked with REU participants on intrinsically linked and knotted graphs at most of these.

The second speaker is Mark McKinzie, St. John Fisher College, speaking on *Euler and a modern evaluation of* $1 + \frac{1}{4} + \frac{1}{9} + \cdots$ Euler derived the sum of this series in several different ways. McKinzie will present a modern derivation for the sum of this series. Curiously this modern derivation is based on properties of the dilogarithm function, mathematics originally developed by Euler. McKinzie asks, could Euler really have missed the connection between the dilogarithm function and the sum of the series?

The Randolph Lecture will be presented by Dr. Carol Schumacher, Kenyon College, Ohio. The title of her presentation is: *What is the Definition of Definition? and Other Mathematical Cultural Conundrums.* Schumacher starts from the position that our goal in our classes should be to help students think like mathematicians. This is of course a non-trivial task. Schumacher will share insights into the difficulties that

students have with this, and activities that can be used in a variety of classes to try to help students move toward thinking like mathematicians. Schumacher has a strong interest in Inquiry Based Learning (IBL), and is the author of two texts that can be effectively used in that context.

The newly formed UNYIBL (Upstate New York Inquiry-Based Learning consortium) will be holding a workshop on Friday afternoon for users of IBL. There will also be a special session of contributed talks related to IBL on Saturday afternoon. For more information contact Patrick Rault at SUNY Geneseo.

On Saturday afternoon there will be a session of undergraduate student talks. Contact David Brown at Ithaca College for information about this (dabrown AT ithaca.edu). There will also a Seaway NExT discussion on teaching Statistics, hosted by Matt Koetz, Nazareth College. There is also a workshop on leadership in the Mathematical sciences, (for chairs, and others who may be interested) organized by Mihail Barbosu, RIT. This will focus on faculty recruitment, and the balance of teaching, scholarship an service in faculty workload. In addition, as always, there are contributed talks on a wide range of interesting topics.

Abstracts of invited presentations follow, and at the end of this newsletter you can find the full meeting schedule and abstracts for contributes talks.   The meeting website has additional information; see http://people.alfred.edu/~seaway/

The Invited Speakers:
Friday Evening – The Banquet speaker

George Hart, Stony Brook University.

Title: Math is Cool!

Abstract:
Geometric sculptures, mathematical puzzles, insightful videos, hands-on workshop activities, and the Museum of Mathematics in NYC are all means to demonstrate that math is a living, creative, joyful subject—i.e., that Math is Cool! Hart will present and discuss a variety of these works from his creative output, and show you some giant mathematical artworks, 3D printed mathematical models, and original workshop projects. For examples of his work, see http://georgehart.com.

Biography:

George Hart is an applied mathematician and sculptor who demonstrates how mathematics is cool and creative in ways you might not have expected. Whether he is slicing a bagel into two linked halves or leading hundreds of participants in an intricate geometric sculpture barn raising, he always finds original ways to share the beauty of mathematical thinking. An interdepartmental research professor at Stony Brook University, he holds a B.S. in Mathematics and a Ph.D. in Electrical Engineering and Computer Science from MIT. Hart is an organizer of the annual Bridges Conference on mathematics and art and the editor for sculpture for the Journal of Mathematics and the Arts. His research explores innovative ways to use computer technology in the design and fabrication of his artwork, which has been exhibited widely around the world. Hart co-founded the Museum of Mathematics in New York City and developed its initial set of hands-on exhibits. He also makes videos that show the fun and creative sides of mathematics. See http://georgehart.com for examples of his work.

Saturday morning invited speakers:

Joel Foisy, SUNY Potsdam

Title: A Survey of Intrinsically Linked and Intrinsically Knotted Graphs

Abstract:

Take 6 points in space, and connect every possible pair of points by non-intersecting arcs. In the 1980s, Conway-Gordon and Sachs proved that no matter how the points are connected, two non-splittably linked loops will form. We say that the complete graph on six vertices is *intrinsically linked*. Conway and Gordon also proved that the complete graph on seven vertices is *intrinsically knotted*. Mathematicians have since attempted to classify all intrinsically linked and intrinsically knotted graphs. In the 1990s, Robertson, Seymour and Thomas classified the complete set of "minor-minimal" intrinsically linked graphs. Their proof is difficult, and intrinsically knotted graphs have been even more difficult to classify.

In this talk, we will survey some known results and open questions about intrinsically linked and intrinsically knotted graphs. There will be a lot of pictures.

Biography:

Joel Foisy was introduced to mathematics research while a student at Williams College, participating in the SMALL Geometry group under Frank Morgan. He went on to obtain his doctorate in mathematics in 1996, studying geometric topology at Duke University under John Harer. Since 1996, he has been teaching at SUNY Potsdam. For 16 summers, he has had the privilege of working with students in a summer REU program, held jointly by SUNY Potsdam and Clarkson University. Most of those summers have been spent studying intrinsically linked and knotted graphs.

Mark McKinzie, St. John Fisher College

Title: Euler and a modern evaluation of $1 + \frac{1}{4} + \frac{1}{9} + \cdots$

Abstract:

The story of Euler's original evaluation of $\zeta(2) = 1 + \frac{1}{4} + \frac{1}{9} + \cdots$ and subsequent rederivations is well known. Each derivation shows the familiar Euler genius for creative manipulation of series. In the modern classroom, it is tempting to attempt an evaluation of the series by more mundane means, by manipulating the power series $f(z) = \sum z^k/k^2$. One progresses without difficulty to find that $\zeta(2) = \int_0^1 -\frac{\ln(1-t)}{t}\ dt$. Evaluating this integral presents an obstacle, but success is possible if one is aware of some properties of the dilogarithm function $Li_2(z) = \int_0^z -\frac{\ln(1-t)}{t}\ dt$. Following

this path, we will obtain another derivation of the value of the series. So far as I know, the earliest appearance in print of this particular method for evaluating the series is from c. 1980.

Curiously, the necessary properties of the dilogarithm were first discovered by Euler himself. His initial work on the dilog function predates his evaluation of $\sum 1/n^2$, appearing in a 1730 paper where he estimates the value of the series to six decimal places. The critical identity for this new derivation was published by Euler in a 1779 paper. In that paper, Euler might easily have then evaluated $\zeta(2)$, but instead he takes its value to be a well-known result. Did Euler realize that his methods provided yet another way to compute $\sum 1/n^2$? Could he have failed to notice?
(This talk is based on joint work with Dan Kalman at American University.)

Biography:

Mark McKinzie earned his Ph.D. in mathematics from the University of Wisconsin in 2000. His dissertation, on the early history of power series, kindled a fascination with the mathematical work of Edmond Halley and Leonhard Euler, and the history of mathematics more generally. He was an Instructor in the Mathematics Department at Monroe Community College from 1999 to 2004, and is currently an Associate Professor at St. John Fisher College in the Department of Mathematical and Computing Sciences. Mark co-authored two papers which were recognized by the MAA with writing awards, the Carl B. Allendoerfer Award (2002), and the Paul R. Halmos - Lester R. Ford Award (2013).

Carol Schumacher, Kenyon College (Randolph Lecture)

Title: What is the Definition of Definition? and Other Mathematical Cultural Conundrums

Abstract:

Helping our students think like mathematicians should be at the center of every class we teach. The particular topic will affect which parts of thinking mathematically we might address, but the goal of every math class should be to turn out students who can bring mathematical reasoning to bear in the context of the material taught in the course. In order to help our students think like mathematicians, we teachers must think deeply about what is going on in our students' heads. But this also takes an unusual amount of self-reflection. We need to understand how we think about things. Unfortunately, thinking mathematically is often something that comes naturally to people who eventually go on to get Ph.D.'s in mathematics. Thus we have no idea how we learned to think this way, and we are often not even aware of how much is really going on in our own heads when we attack a mathematical question. I can attest to the fact that this was certainly true of me. As I have become more self-aware, I believe my teaching has improved tremendously. In addition to trying to illustrate some of the insights acquired over many years, the talk will be filled with illustrative examples of activities that can be used in different courses to help students engage the mathematical ideas of the course as mathematicians do every day.

Biography:

Carol Schumacher is Professor of Mathematics at Kenyon College in Gambier, OH. She received a BA in Mathematics from Hendrix College in 1982 and a Ph.D. in Mathematics from The University of Texas at Austin in 1989. She joined the Kenyon faculty in the fall of 1988. Carol loves teaching and is the winner of Kenyon's

Trustee Teaching Award. She is very interested in inquiry-based learning (IBL) and is the author of two texts written to support an inquiry-based approach: Chapter Zero—Fundamental Notions of Abstract Mathematics, 2E and Closer and Closer—Introducing Real Analysis. Carol just completed her third term as chair of the mathematics department at Kenyon and is one of a team of MAA members working on the 2015 CUPM Curriculum Guide to Majors in the Mathematical Sciences.

Announcement: 2015 Hudson River Undergraduate Mathematics Conference.

The 22nd annual Hudson River Undergraduate Mathematics Conference (HRUMC XXII) will held be at Union College in Schenectady, NY on Saturday, April 11, 2015. The keynote speaker will be Professor Ron Rivest from MIT. Funding for the HRUMC is provided by NSF grant DMS-0846477 through the MAA Regional Undergraduate Mathematics Conferences program, www.maa.org/RUMC, and from Union College. For more information contact Dr. Paul Friedman at Union College.

Centennial of Pi Mu Epsilon:

Professor Jack Graver of Syracuse University, gave an invited presentation on the history of PME at MathFest in August, in Portland, Oregon. Thanks to Professor Graver for contributing to this issue of Seaway currents the following interesting note on the history of Pi Mu Epsilon.

This year is the centennial of the mathematics honor society Pi Mu Epsilon; it was founded here at Syracuse University. In 1903 a Mathematical Club was formed here and, in the 1913-14 academic year, it reformed itself as a mathematical fraternity.

Edward Drake Roe Jr. is recognized as the founder of Pi Mu Epsilon and as a driving force behind its growth during its early, formative years. He was born in 1859 in Elmira, New York. He attended Syracuse University receiving a bachelor's degree in 1880. He then went to Harvard, receiving a second bachelor's degree in 1885 and a master's degree in 1887. He was an associate professor of mathematics at Oberlin College and, in 1897, took an extended sabbatical to study for his Ph.D. at the University of Erlangen in Bavaria. He earned that degree in 1898. He returned to Syracuse in 1900 becoming the first to hold the John Raymond French Chair in Mathematics. When PME became a national organization in 1922 with additional chapters in Ohio, Pennsylvania, Alabama and Missouri, Dr. Roe was named Director General. Dr. Roe continued as Director General of **PME** until his death in 1929 at age 70. By that time **PME** had grown to 18 Chapters.

Some interesting facts:

There was a long discussion concerning selecting a name from among the following proposals:
>   Epsilon Pi, to promote scholarship;
>   Epsilon Pi Mu, to promote scholarship and mathematics;
>   Pi Phi Mu, loving disciples of mathematics;
>   Alpha Pi, efficiency in all things and
>   Mu Rho Beta, mathematics – the foundation of mental power.

The second option was finally chosen and later reordered.

Two thirds of the 50 student charter members were women and this 2-1 ratio of women to men persisted for several years.

PME is a charter member of the MAA! The group decided to join the MAA as an individual member and sent a $3 check for an individual membership to the MAA. You can imagine the consternation of the MAA treasurer receiving a $3.00 check from the treasurer of PME for an individual membership. There were and are no provisions for an organization other than a college or university to join the MAA. He solved his problem by entering *President, Pi Mu Epsilon Fraternity, Syracuse University* as an individual member in the list of the 1028 individual charter members. It is clear that "President" was added by the MAA since PME had a director not a president. In any case, PME is one of the 53 surviving charter members of the MAA (52 Colleges and Universities and PME).

A little more the history of the Seaway Section:

Thanks to Steve Cavior, professor emeritus at SUNY Buffalo for this interesting titbit:

"Did you know that the name The Seaway Current was chosen during my term as chair, in ancient times? The officers liked my suggestion, and the rest is history. The production in the olden days was an ordeal. For years I had it printed in the UB print shop, and delivered a bundle of copies for the Canadian members to Howard Bell, at Brock, who got them into their mail stream." (Cavior was chair of the Seaway Section 1991-93, and governor of the section 1994-97.)

REPORTS

1. Treasurer's Report – Fall 2014 – Gary Towsley

Treasurer's Report – Fall 2014
Seaway Section of the Mathematical Association of America

1. Balance as of 3/01/2014	$15,230.36
2. Spring meeting at SUNY Buffalo State	
a) Meeting Expenses	$5229.08
b) Honoria, Speaker Expenses	$782.25
b) Meeting Receipts	$5340.00
c) Net	($581.33)
3. Booksale Proceeds	$229.97
4. Subvention from MAA	$1,259.00
5. Balance as of 9/15/2014	$16,138.00

2. Minutes of the Executive Committee meeting, April 25, 2014

Present: Ryan Gartner, Charles Ragozzine, Gary Raduns, John Maceli, Gary Towsley, Jane Cushman, Sandeep Bhargava.

Minutes of the Executive Committee Meeting of October 18, 2013 were approved.
Chair deferred his report until later.
Secretary:
      The Secretary brought two matters:
      1. T-Shirts for Centennial Celebration. Fine idea but lacks organizer and time to complete.

2. Association request for support from Section for Project NExT. The executive committee declined to send support.

Treasurer's Report:
A written report was distributed.
- Balance 9/30/2013: $15,443.92
- Balance 3/1/2014: $15,230.26
- Reporting a net gain of $746 on the Fall 2013 meeting. Deposits made for this meeting prior to 3/1 reflected in the balance above.
- A note that our subvention is $200 + 2.25% of dues collected from members of the Section.

First Vice Chair's Report:
- The program for this meeting includes plenary speakers Steve Dunbar (MAA Visitor), Keary Howard (Distinguished Teaching Award recipient), and Maria Chudnovsky (Gehman Lecturer).
- The Fall 2014 meeting will be held October 10-11 at Alfred University. One speaker has been confirmed at this point, Joel Foisey. The Randolph Lecture Committee is working on an external grant to secure a speaker on IBL.
- The Spring 2015 meeting will be held April 17-18 at Colgate University and will mark the 75th Anniversary of the Section and the Centennial of the Association.

Governor's Report
- Much of the discussion at the Governor's meeting held in conjunction with the JMM in Baltimore focused of potential changes of the role of the governors' in Association governance.

New Business
- A discussion to have terms of standing committees end at the mid-term of the Chair of the Section.
- The Nominating Committee is seeking nominees for 1st Vice Chair (Program Chair). Will also be seeking nominees soon for Governor.
- A report of SUNY Seamless Transfer. In a second round of discussions, Discrete Mathematics has been removed with Linear Algebra and Differential Equations approved for seamless transfer. There is concern that many community colleges do not include sequences and series in second semester calculus.
- Discussion of credit card payment options. EventBrite was suggested, but would require raising total cost to about $68 to net the current $63 registration. Action deferred.
- Discussion of using the liaison lists versus developing a section-based list-serve.
- The Section history has been posted to the website. Gary T would like help on narrative history of the section, especially the last 25 years.
- Discussion of the program for the Spring 2015 meeting included suggestions such as: a history of the Section presentation at the Banquet, celebratory stickers, birthday cake, speakers with higher profile.
- Two suggestions to increase participation in the Section:
  o Prize money for student paper session
  o Small local workshops with Section funded lunch and presentation for adjunct faculty. Does NYSMATYC have a similar program?

Adjourned to the Extended Executive Committee Meeting

Respectfully submitted,
Gary Raduns
Seaway Section Secretary

3. Minutes of the Extended Executive Committee, April 25, 2014

Student Program Report:
- 18 presentations are scheduled for the meeting. The number of student paper presentations has varied from 23 at the Hamilton College meeting in Spring 2012, 13 at Elmira in Fall 2012, 16 at Fredonia in Spring 2013, 13 at Potsdam in Fall 2013.
- Blaire Madore will be hosting Math Jeopardy following the Banquet tonight with gift cards for prizes.

Randolph Lecture Committee is trying to obtain Stan Yushinobus, Cal Poly for the next Randolph Lecture. The Gehman committee has invited (awaiting reply) John Kleinberg (Cornell U.) to speak at the Colgate Meeting (Spring 2015).

Program Committee Report:
- Soliciting names of potential speakers for the Colgate.
- Discussion of travel funding for invited speakers.
- Upcoming venues:
  o Alfred University, Fall 2014
  o Colgate University, Spring 2015
  o St. Lawrence University, Fall 2015
- Suggestion to form a "Venues Committee"

Nominating Committee is still working on nominations for 1st Vice Chair and for Chair Elect.

Seaway Current
- Send text materials in advance.
- Thanks to Anurag for getting the Current posted promptly and to Jeff Johannes for forwarding to liaisons.

Webmaster: No report

New Business:
>   Reviewed items from the Executive Committee session: Committee terms, seamless transfer, and credit card payments. Discussion included recommendation to survey the membership regarding interest in making payments via credit card.

Adjourned at 6:14

4. Minutes of the Business Meeting, April 11, 2014

Called to order at 10:42 with approximately 20 in attendance.

Governor's Report:
>   Gary Towsley indicated that much of the discussion at the most recent Governor's meeting focused on how to make Board of Governor's Meetings more effective/efficient.

Secretary Report: None beyond the minutes as distributed.

Treasurer's Report:
- Balance 9/1/2013: $15,443
  Balance 3/30/2014: $15,230
- The Section is in good financial health.
- Follow-up discussion from the floor encouraged Section to support NExT participants from the Section in the National NExT program.

The next meeting of the Section will be at Alfred University with Joel Foisey (SUNY Potsdam) as a featured speaker.

Chair, Charles Ragozzine gave an overview of the activities from the Executive sessions.

Nominating Committee Report:
    The Nominating Committee presented Ryan Gantner as its nominee for Chair-elect, and Jonathan Cox as its nominee for 1st Vice Chair. Both were elected on voice vote.
The business meeting adjourned at 11:03.

Respectfully submitted,
Gary Raduns
Seaway Section Secretary

Section notes:

Ithaca College

- Matthew Thomas joined the department in Fall 2014. Matt graduated from the University of Arizona with a specialization in Mathematics Education, with a focus on conceptual gains in introductory calculus. For Matt this is a return to Ithaca; he did undergraduate degree at Cornell University.
- John Maceli and Eric Robinson were granted emeritus status.
- Steve Hilbert and Dani Novak retired from the department.
- Kelly Delp participated in and was a member of the Proceedings Committee for the 2014 Bridges Conference in August, held in Seoul, Korea.
- Stan Seltzer is now Editor of MAA Texts.

Niagara University

- Dr. Michael Barg received a promotion to Associate Professor and Tenure at the end of last year
- Dr. Amanda Mangum was hired as an assistant professor and recently inducted into National Project NExT.

St. John Fisher College:

Professor Carol Freeman and Associate Professor Gerry Wildenberg retired at the end of the 2013-2014 Academic Year and are now Professors Emeriti. We wish them a healthy and happy retirement.

SUNY Plattsburgh:

Professor Emeritus Donald C. West died in August, after a three year battle with cancer. He retired from the Mathematics Department at SUNY Plattsburgh in 2000, after 31 years of service. His passions included mathematics, ski-jumping, cycling and his vegetable garden. He will be sorely missed.

Spring Meeting:

Spring 2015:   April 17-18, 2015, at Colgate University, Hamilton, NY.

Some Important Links

The Seaway Current

The Seaway Current is published twice per year by the Seaway Section of the Mathematical Association of America for the benefit of its members. Its pages are open to all members of the MAA and, by invitation to others, for the exchange of information and opinion. Contributed announcements, articles, and editorials are welcome and should be sent to the editor.

Material may be submitted by e-mail. Presently, this newsletter is produced using Microsoft Word, which can import plain text files or files produced by most standard word-processing software.

Opinions expressed in this newsletter are those of the editor or of individual contributors and do not necessarily represent the views of the MAA or of the Seaway Section.

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SEAWAY SECTION

MATHEMATICAL ASSOCIATION

OF AMERICA

2014 FALL MEETING

October 10-11

ALFRED UNIVERSITY

PROGRAM

Friday afternoon: Abigail Allen Room
2nd floor of Powell Campus Center
12:00 – 5:00 UNYIBL Consortium
IBL Workshop **Carol Schumacher** (Kenyon College) and **David Clark** (SUNY New Paltz)

Friday afternoon: McNamara Room, 1st floor of Powell Campus Center

3:00 – 6:00 Meeting of the Executive Committee

Friday Evening: Knight Club, 3rd floor of Powell Campus Center

6:00 – 7:00 Social Hour (cash bar)

7:00 – 8:30 Banquet

8:30 – 9:30 **George Hart**, Stony Brook University

Math is Cool!

9:30-10:30 **Math Jeopardy** hosted by **Blair Madore**, SUNY Potsdam

Saturday morning: Holmes Auditorium, Harder Hall

8:40 – 8:45 Welcome address by **Dr. Rick Stephens**, Provost and Vice President of Academic Affairs, Alfred University

8:45 – 9:35 Joel Foisy, SUNY Potsdam
A Survey of Intrinsically Linked and Intrinsically Knotted Graphs

9:45 – 10:35 Mark McKinzie, St. John Fisher College
Euler and a modern evaluation of $1+\dfrac{1}{4}+\dfrac{1}{9}+\cdots$

10:35 – 11:00 Business Meeting
11:10 – 12:00 Randolph Lecture: Carol Schumacher, Kenyon College
What is the Definition of Definition? and Other Mathematical Cultural Conundrums

Lunch: 12:00 – 1:30 Knight Club, 3rd floor of Powell Campus Center

Saturday afternoon: Franklin W. Olin 307

1:30-1:55 **Nikolai A. Krylov**, Siena College
A congruence property of irreducible Laguerre polynomials in two variables

2:00-2:25 **John Peter**, Utica College
Spaces with Two Basepoints

2:30-2:55 **James Marengo**, RIT
Another Look at the Sums of Euler

3:00-3:25 **Gabriel Prajitura**, SUNY Brockport
The Sendov Conjecture

3:30-3:55 **Ruhan Zhao**, SUNY Brockport
Korenblum's Maximum Principle for the Bloch space

4:00-4:25 **Jonathan Lopez**, Niagara University
An Introduction to Lie Algebras Using 2×2 *Matrices*

Saturday afternoon: Franklin W. Olin 310

1:30-1:55 **Joaquin Carbonara**, and **Dave Ettestad**, Buffalo State
How a Mancala like game (the Cups and Stones problem) can be described as a discrete version of the fractal called Sierpinski triangle

2:00-2:25 **Joseph Brennen**, Binghamton University
Flipped Calculus at Binghamton SUNY

2:30-2:55 **Peter Mercer**, Buffalo State College
Cauchy's Mean Value Theorem Meets the Logarithmic Mean.

3:00-3:25 **Olympia Nicodemi**, SUNY Geneseo
A Non-Historian's Fun with Leibniz

3:30-3:55 **Carl Lutzer**, RIT
A constructivist's approach to introducing the Laplace Transform in a first course in differential equations

Saturday Afternoon: Franklin W. Olin 302

1:30-4 IBL Contributed Talk Session
Moderator: **Patrick Rault**, SUNY Geneseo

1:30-1:42 **Phong Le**, Niagara University

A Beginners guide to IBL from a Beginner

1:45-1:57 **Xiao Xiao**, Utica College

IBL in Upper-Level Courses

2-2:25 **Jonathan Cox**, State University of New York at Fredonia

Two different approaches to rapid implementation of IBL

2:30-2:55 **Likin C. Simon Romero**, Alfred

Active learning in a large Multivariable Calculus class

3-3:25 **Nicole Juersivich**, Nazareth College

Teaching Calculus I Using a Modified Moore Method

3:30-4 **Padraig McLoughlin**, Kutztown University of Pennsylvania

Gaining More From the Moore Method

Saturday afternoon: Franklin W. Olin 311

1:30-2:25 Seaway NExT Discussion
organized by **Matt Koetz**, Nazareth College

Teaching Statistics

2:30-3:25 Workshop on Leadership in the Mathematical Sciences organized by **Mihail Barbosu**, RIT

Faculty Recruitment

Faculty Workload

Saturday Afternoon:

Student Talk Sessions
organized by **David Brown**, Ithaca College

The schedule can be found on the green sheet in your folder.

Registration, Meals, and Refreshments

Registration will take place at the Knight Club on the 3rd floor of Powell Campus Center on Friday evening during the social hour from 6:00 to 7:00, and on Saturday morning from 8:00 outside the Holmes Auditorium in Harder Hall. Lunch will be served at noon at the Knight Club on the 3rd floor of Powell. Beverages and snacks will be served on Saturday morning at 8:00 outside Holmes Auditorium and 2:30-4:30 in the Franklin W. Olin Building.

Accommodations

The "headquarters hotel" is the Saxon Inn in Alfred, NY. A block of rooms has been reserved there as well as in the Maple City Inn. Mention "MAA Seaway Section" when making your reservation. The deadline is September 20, 2014.

Meeting Website

http://people.alfred.edu/~seaway/

NEXT MEETING:

April 17-18, 2015

COLGATE UNIVERSITY

Franklin W. Olin Building, Room 207

1:30 - 1:55   **Megan Brunner, SUNY Geneseo**
Continuity Properties of the Modulus Function of Walk Families

2:00 - 2:25   **Tamalika Mukherjee, Rochester Institute of Technology**
Inverse Limits Applied to Economic Theory

2:30 - 2:55   **Sara Schleissmann, SUNY Oneonta**
Certain Properties of Linear Transformations In Regard With Fixed Points

3:00 - 3:12   **Julia Martin, SUNY Oswego**
Epidemiology of Rabies

3:15 - 3:27   **Kristen N. Bales, East Tennessee State University**
Zachary D. Eager, Rochester Institute of Technology*
Anthony A. Harkin, Rochester Institute of Technology
Efficiency Modularity for Finding Communities and Anticommunities in Network

3:30 - 3:42   **Amy Hannahan, SUNY Oswego**
Programming the Chermak-Delgado Lattice

3:45 - 3:57   **Ashley Colopy, SUNY Brockport**
Separating & Reassembling Circular Inequalities

Franklin W. Olin Building, Room 210

1:30 - 1:55   **Ryan Vogt, Rochester Institute of Technology**
Compressible Reactive Flow and the Godunov Method

2:00 - 2:25   **Christina Wahl, SUNY Potsdam**
Uniquely Bipancylic Graphs

2:30 - 2:55   **Evan Witz, Rochester Institute of Technology**
Symmetric Products of Graphs

3:00 - 3:12   **Madeleine Burkhart, Skidmore College**
Jonathan Doane, SUNY Potsdam*
Cristopher Negron, SUNY Potsdam*
Andrew Castillo, Texas A&M
Instrinsically Spherical Linked Graphs

3:15 - 3:27   **James Myer, SUNY Potsdam**
Quantum Walk, State Transfer, and Graph Laplacians

3:30 - 3:42   **Brianna Lindsay, Elmira College**
The Interpolated Medians of Self-Reported Counts of Same-Sex Partners Based On Gender And Age

* denotes presenter

Saturday Afternoon - Abstracts

Special Sessions

Inquiry-Based Learning Contributed Talk Session

Contact and moderator: Patrick Rault, SUNY Geneseo; rault@geneseo.edu

1:30-1:42 **Phong Le**, Niagara University
A Beginners guide to IBL from a Beginner

I learned about IBL many years ago from friends and colleagues. I had witnessed the impressive levels of independence and curiosity that it can foster. Yet it took me many years to finally take the plunge. In this talk I'll describe my fears, hesitations and the reality of teaching IBL for the first time. Special focus will be paid to the challenges of transitioning from a lecture style class to a more student-centered approach.

1:45-1:57 **Xiao Xiao**, Utica College
IBL in Upper-Level Courses

In this talk, I will share my amateur experiences of using IBL in two courses: Introduction to Proof and Introduction to Abstract Algebra. These will include but not limited to, writing my own notes, color felt-tip pens, presentation management, electronic feedback and weekly journals.

2-2:25pm **Jonathan Cox**, State University of New York at Fredonia
Two different approaches to rapid implementation of IBL

Although my first "official" IBL course will be in Spring 2015, I am incorporating IBL activities and philosophy to the greatest extent possible in this semester's Calculus I and History of Mathematics courses. I will briefly present the arguments that compelled me to implement inquiry-based learning immediately. Then I will describe how I am employing IBL in each course. While there are similar themes in the implementations, there are also significant differences, particularly in the time and effort involved in the conversion. I will also share some of the struggles I am facing in adapting to this new way of teaching.

2:30-2:55 **Likin C. Simon Romero**, Alfred University
Active learning in a large Multivariable Calculus class

During the last academic year, I used a flipped classroom model in my Multivariable Calculus classes. The classes were about 40 students each and focused on non-Mathematics majors. The class activities were based on the ones used by Ron Taylor in Berry College. The class was part of the Learning Assistant Program. Two learning assistants were assigned to the class to act as facilitators. In this talk, we will discuss our experiences as well as the benefits of the use of learning assistants.

3-3:25 **Nicole Juersivich**, Nazareth College
Teaching Calculus I Using a Modified Moore Method

For the first time, I am using a modified Moore method to teach Calculus I to 35 mixed majors. My main goals are for students to develop a solution and supporting argument, communicate that solution and argument orally and in writing, and to defend or adjust their argument as necessary. Therefore, the majority of our class time is spent on student presentations. In this session, I will present the materials I used, our class structure, the assignments and evaluation procedures, preparation, pitfalls, successes, and student comments.

3:30-4 **Padraig McLoughlin**, Kutztown University of Pennsylvania
Gaining More From the Moore Method

R.L. Moore, H. S. Wall, and H.J. Ettlinger established a center of learning based on the philosophy of education we now call "the Moore Method." I studied (at Emory University, Auburn University, and Georgia State University) under mathematicians who were students of the three and employed the method. The method was

so instrumental in my intellectual development that I found myself naturally tending to teach using a modified Moore method and opining such is most helpful in guiding students' intellectual development.

In this talk we shall discuss the Moore pedagogy, how we adapted it for use in freshman-level through graduate-level courses (with special attention being paid to Probability and Statistics). We will discuss some successes, failure, trials, and tribulations. We will highlight some of the differences between the Moore Method and our modified Moore method, and moreover compare and contrast other forms of Inquiry-Based Learning (IBL) to our modified Moore method. Finally we will accent how and why I opine this method helps students intellectually stretch, mature, and prosper. Upstate New York Inquiry Based Learning (UNYIBL) Consortium

Seaway NExT Discussion

Teaching Statistics

1:30-2:25 Hosted by Matt Koetz, Nazareth College

Workshop on Leadership in the Mathematical Sciences

Faculty Recruitment

Faculty workload: teaching, scholarship and service

2:30-3:25 Organized by Mihail Barbosu, RIT

Saturday afternoon
Contributed talks

1. **Joseph Brennen**, Binghamton University: *Flipped Calculus at Binghamton SUNY*

At Binghamton, Calculus 1 is taught to over 1,000 students each fall in sections of about 30-40 students, with graduate student instructors teaching most sections. Though fortunate to be in small classrooms rather than lecture halls, the satisfaction and performance of students in this course has often been poor. We had hoped to improve student success by changing how we teach and not by lowering our standards. In the fall of 2013 the Binghamton University Department of Mathematical Sciences undertook an experiment in flipped teaching with Calculus 1 in which we compared a flipped model to our traditional lecture model. Overall, our quantitative analysis found moderate benefits to flipping over traditional methods for all groups studied. In fall 2014, all sections of Calculus 1 at Binghamton will run under the flipped model. This is joint work with Laura Anderson.

2. **Joaquin Carbonara**, and **Dave Ettestad**, Buffalo State: *How a Mancala like game (the Cups and Stones problem) can be described as a discrete version of the fractal called Sierpinski triangle*

In 1992 Barry Cipra posed the Cups and Stones problem that consists of setting up a circular arrangement of cups with one stone in each, and then moving the stones based on a transition rule. The original question posed was to find the number of configurations for any given number of cups. In the process of answering that question, the authors discovered a surprising link between this counting problem and the fractal called Sierpinski triangle. This presentation will outline the techniques used and results obtained in solving the Cups and Stones problem.

3. **Nikolai A. Krylov**, Siena College: *A congruence property of irreducible Laguerre polynomials in two variables*

In this talk we present a version of irreducible Laguerre polynomials in two variables and show that these polynomials satisfy a congruence property, which is similar to the one obtained by Carlitz for the classical Laguerre polynomials in one variable.

4. **Jonathan Lopez**, Niagara University: *An Introduction to Lie Algebras Using 2×2 Matrices*

A Lie algebra is a vector space over a field that is equipped with a special "bracket" operation. We describe some of the basic properties that Lie algebras must satisfy, and present several examples involving 2×2 matrices. These techniques can be generalized to higher dimensions, and the resulting Lie algebras can be used to obtain topological information about the underlying group.

5. **Carl Lutzer**, RIT: *A constructivist's approach to introducing the Laplace Transform in a first course in differential equations*

Among all topics in the lower-division mathematics curriculum, the Laplace Transform is one of the most difficult to motivate conceptually, and to explain in a way that students find meaningful. This talk focusses on a way of introducing the transform as proceeding naturally from simple ideas about probability. By using this presentation, students find the Laplace transform meaningful rather than magical (in our experience), and accept it as a reasonable tool that is within their intellectual grasp. In brief, Riemann sums are used to approximate the expected net change in a function, assuming that it quantifies a process that can terminate at random. We assume only a basic understanding of probability.

6. **James Marengo**, RIT: *Another Look at the Sums of Euler*

In this talk, I will evaluate an integral that provides a rigorous argument behind the evaluation of Zeta(2) after explaining Euler's approach for this series. I will also talk about how Euler evaluated Zeta($2n$) for other small values of n. This talk will be accessible to undergraduate math students.

7. **Peter Mercer**, Buffalo State College: *Cauchy's Mean Value Theorem Meets the Logarithmic Mean.*

We show how several results involving the Arithmetic, Geometric, and Logarithmic Means can be obtained in a simple and unified way, using Cauchy's Mean Value Theorem.

8. **Olympia Nicodemi,** SUNY Geneseo : *A Non-Historian's Fun with Leibniz*

When reading Leibniz for the first time this summer, I realized how much it was like learning Calculus for the first time. I faced the same hurdles as our students. I would like to share the experience with other non-historians. Historians are welcome to come and set my story straight.

9. **John Peter,** Utica College: *Spaces with Two Basepoints*

The suspension of a topological space is an important construction in homotopy theory. We will address the extent to which a given topological space is equivalent to the unreduced suspension of another topological space. The unreduced suspension of a space comes naturally equipped with two basepoints (the "north and south poles") and, in nice enough cases, is equivalent to the reduced suspension of the same space (which has a single basepoint). We will show, however, that under certain conditions, forming the reduced suspension is not always necessary. This provides a solution to what we call the "Unreduced Desuspension Problem".

10. **Gabriel Prajitura**, SUNY Brockport: *The Sendov Conjecture*

The Sendov Conjecture is based on Gauss - Lucas Theorem which, in turn, is a complex variable form of Rolle's Theorem from real analysis. Rolle's Theorem and Gauss - Lucas theorem discuss the position of the zeros of the derivative with respect to the zeros of the function. The Sendov Conjecture is about how far the zeros of the derivative of a polynomial can be from the zeros of the polynomial. After no progress in the last 15 years interesting new developments came this year.

11. **Ruhan Zhao**, SUNY Brockport: *Korenblum's Maximum Principle for the Bloch space*

Let $D = \{z \in C : |z| < 1\}$ be the unit disk in the complex plane. For an analytic function f on D, we say that f is in the Bloch space B, if $\sup_{z \in D} |f'(z)|(1 - |z|^2) < \infty$. It is well-known that B is a Banach space with the norm $\|f\|_B = |f(0)| + \sup_{z \in D} |f'(z)|(1 - |z|^2)$. In this talk we investigate the following problem: Given two analytic functions f, g in the Bloch space B that satisfy $|f(z)| \le |g(z)|$ for all $z \in D$, is it true that $\|f\|_B \le \|g\|_B$? We study this problem for polynomials and show that, while the answer to this question is negative for certain pairs of polynomials, we do have certain cases that the answers are positive. Especially, we show that the above question has an affirmative answer if f and g are complex quadratics with $f(0) = g(0) = 0$. This is a joint work with Liangying Jiang and Gabriel T. Prajitura.