

THE SEAWAY CURRENT

Newsletter of the Seaway Section of the Mathematical Association of America

Volume 39, Number 2

Spring, 2016

SUNY Geneseo will host the Spring 2016 meeting, April 15 - 16.

Combining a strong traditional mathematics major with opportunities for student research, a very successful secondary education program, and preparation in applied mathematics and statistics, the Department of Mathematics is committed to helping each Geneseo student achieve his or her goals, both before and after Geneseo. (Department of Mathematics webpage, <http://www.geneseo.edu/math>).

Special Notice: Registration is available online and participants can pay via credit card! Head to the meeting website, <http://www.geneseo.edu/seaway>, for registration and accommodations information.

Thank you SUNY Geneseo for hosting our meeting!

The Invited Speakers

Friday Evening – The banquet speaker

Robert Rogers, State University of New York at Fredonia



Title: After All, It's Just Algebra!

Abstract:

Basic algebra, as taught in high school, took over 3000 years to develop; long before the development of equations, variables, and symbol manipulation. We will take a fun look at some of my favorite problems from this evolution along with solutions that don't rely on relatively modern techniques. We might gain some insight into why algebra remains a sticking point for some of our students.

Biography:

Bob Rogers received his B.S. in Mathematics with Certification in Secondary Teaching from Buffalo State College, his M.S. in Mathematics from Syracuse University, and his Ph.D. in Mathematics from SUNY Buffalo, specializing in functional analysis/operator theory. He is currently a SUNY Distinguished Teaching Professor of Mathematics at SUNY Fredonia. His current interests are in analysis, STEM education, and the history of mathematics as it applies to mathematics education. He is former chair and governor of the MAA Seaway Section and a past president of the Association of Mathematics Teachers of NYS. He is a recipient of the SUNY Fredonia President's Award for Excellence in Teaching, the Seaway Section's Clarence F. Stephens Distinguished

Teaching Award, and the MAA Meritorious Service Award - Seaway Section. He is currently the Editor of the NYS Mathematics Teachers' Journal and an active member of the NYS STEM Education Collaborative and Western NY STEM Hub.

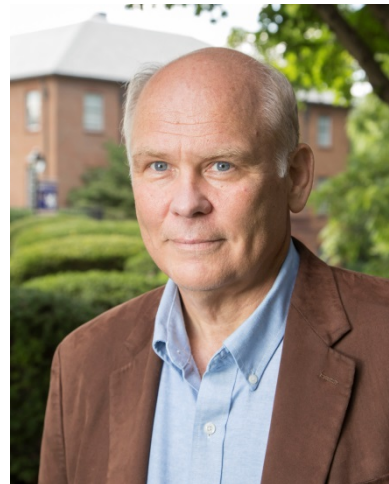
Saturday morning invited speakers:

Andrew Simoson, King University

Title: Continued Fractions and the Solar Eclipse

Abstract:

From the Stern-Brocot tree for generating all fractions between 0 and 1, starting with only 0 and 1, we deduce a maverick greedy continued fraction algorithm to generate fractions approximating any given irrational, and sketch why this algorithm is equivalent to the analysis of what is called strange Strang figures or signatures, the set of points $(n, \sin(2\pi xn))$ where x is a specific irrational number, over the set of integers n . We then apply the algorithm, sketching how to predict the next solar or lunar eclipse.



Biography:

Andy Simoson earned a PhD from the University of Wyoming in 1979, and has been teaching at a small liberal arts college in the hills of eastern Tennessee since then, except for two Fulbright appointments to Africa: the University of Botswana in Gaborone in 1990-91, and the University of Dar es Salaam in Tanzania on the Indian Ocean in 1997-98. He is the recipient of two MAA writing awards: the Polya Award for *Pursuit Curves for the Man in the Moone*, and the Chauvenet Prize for *The Gravity of Hades*. He has published two books with the MAA: *Hesiod's Anvil* about falling and spinning through heaven and earth, and *Voltaire's Riddle* about Voltaire being a champion of Newton's *Principia* and an overview of the mathematics behind the twin French Academy expeditions in the 1730's to the polar and equatorial regions to settle once and for all Newton's claim about a flattened earth. Andy is the proud grandfather of a 6 month's old baby girl.

Luise-Charlotte Kappe, Binghamton University (Gehman lecturer)



Title: Finite Coverings: A Journey through Groups, Loops, Rings and Semigroups

Abstract:

A group is said to be covered by a collection of proper subgroups if each element of the group belongs to at least one subgroup in the collection: the collection of subgroups is called a covering of the group. If the set of subgroups is finite, we say the group has a finite covering. Many questions raised in the context of finite coverings of groups, such as conditions for a group to have a finite covering by abelian subgroups or determining the minimal number of subgroups needed to cover the group, make sense in other algebraic structures too.

In my talk I will report on my journeys through groups, loops, rings and semigroups, on what I discovered there about finite coverings together with several fellow travelers and on some discoveries which might still lie ahead.

Biography:

Luise-Charlotte Kappe is a native of Germany, where she studied at the Universities of Erlangen and Freiburg. She obtained her Ph.D. under the direction of Theodor Schneider in the area of transcendental numbers and is now working in group theory in a variety of areas. These include commutator calculus, subnormality and finiteness conditions, and several others. She experienced that applying other areas of mathematics like graph theory and combinatorics is very helpful to reach one's goals. The same thing holds for GAP as a research tool, in particular for constructing examples and extrapolating from the insight gained through them.

In 1963, she and her husband Wolfgang immigrated to the US. After spending five years at Ohio State University, they moved to the State University of New York at Binghamton. After raising two sons, she "raised" fourteen Ph.D. students. In 1999 she received an NSF grant to develop a pilot program for the preparation of future mathematics faculty. Since 2004 she is Professor Emerita. She is still active in research and every fall she teaches a course on a topic she likes.

From 1994-2000 Dr. Kappe served the section as First Vice-Chair, Chair-Elect, Chair, and Immediate Past-Chair, and from 2003 to 2006 she was the Governor of the section. She has served on and chaired a variety of committees in the section, and was a founding member of the Seaway NExT Advisory Committee. In 2002 she gave the post-banquet talk at the section's spring meeting, "It's a Wonderful Life! - Observations on a Career as a Mathematician." Dr. Kappe is the recipient of the 2003 MAA Certificate of Meritorious Service.

Carl Lutzer, Rochester Institute of Technology



Title: Hammering Home Undergraduate Mathematics

Abstract:

Grab a hardcover book from your shelf. Really, this is an "audience participation" abstract, so grab a book. I'll wait. (If you have a rubber band available, put it around the book.) Now stand up and hold the book in your hands so that the cover is parallel to the ground and you can read the title. The book has three natural axes, the longest of which is parallel to its spine. It's easy to spin the book about this long axis. With

a little more effort, you can catch it after one revolution and find that you can still read the title. (Try it!) The short axis of the book extends from the front cover to the back cover, perpendicular to the spine. Spinning about this axis is also easy. However, something strange happens when you try to spin the book about its medium-length axis, which is perpendicular to the other two, extending across the width of the book from its spine to its fore edge: the book twists in the air! When I first encountered this physical phenomenon, I saw it with a hammer, in which the twist is apparent when you compare the orientation before you toss and after you catch the hammer. (You can try this at home, but be careful! Maybe wear a helmet.) In this talk I'll use multivariable calculus, differential equations, and linear algebra to provide mathematical insight into this twisting phenomenon.

Biography:

Carl Lutzer has always been interested in ways that the physical world informs our understanding of mathematics, and vice versa. He earned his Ph.D. at the University of Kentucky where his dissertation (under the direction of Peter Hislop) focused on the mathematics of electrical impedance tomography. Since then he has been a faculty member at the Rochester Institute of Technology, where he has participated in several applied research projects including the study of micro-electromechanical systems (MEMS), mobile ad-hoc networks (MANETS), and a method of using partial differential equations to determine the health of the human eye based on light-scattering data. RIT has also been a place where Dr. Lutzer has been able to continue

pursuing his interest in teaching; in 2006 he won the MAA's Carl B. Allendoerfer Award for Expository Excellence, and in 2013 Dr. Lutzer earned the university's Eisenhart Award for Excellence in Teaching.

Special Events

Seaway NExT Workshop

Friday, April 15, 1 - 4/4:30, South Hall 328

Organized by Matt Koetz, Nazareth College, and Nathan Reff, SUNY Brockport

Description: This is a free workshop and all faculty are welcome to attend. This spring the workshop topic is Inquiry-Based Learning (IBL) of multivariable calculus and discrete mathematics. The workshop leaders are David Clark, IBL expert and professor emeritus at SUNY New Paltz, and Ted Mahavier, IBL expert and professor at Lamar University (Texas). Faculty interested in joining the workshop should contact Nate Reff (nreff@brockport.edu) by Monday, April 4.

Team Trivia Tournament

Friday night, following the banquet speaker

Hosted by Blair Madore, SUNY Potsdam

Description: Students and faculty from different colleges form teams to answer a series of mathematical trivia challenges. There will be prizes! For rules and guidelines, see

<http://www.geneseo.edu/seaway/student-information>.

Visioning Session on the Future of the Seaway Section

Saturday afternoon, April 16

Organized by Ryan Gantner, St. John Fisher College

Sit down with the Chair of the Seaway Section to discuss initiatives for the future. What should we do at future meetings? Workshops? Mini-courses? Fun events? Charity fundraisers? Technology training? Something radically different? What should we do outside of the meetings? Bring your own ideas for the future as we brainstorm things that can be done as well as their benefits, drawbacks, and constraints.

Workshop on Leadership in the Mathematical Sciences

Saturday afternoon, April 16

Hosted by Mihail Barbosu, Rochester Institute of Technology

Topics:

Tenure and Promotion Process and Criteria

Handling Difficult Situations

Elections of the Section

During the Business Meeting on Saturday, elections for the Section Officers Executive Committee will take place. The nominations brought forth by the nominations committee, appointed by the Section Chair, are as follows:

Chair-Elect: Jonathan Cox (SUNY Fredonia)

First Vice-Chair: Cheryl Miller (SUNY Potsdam)

Program Chair: Cheryl Miller (SUNY Potsdam)

Second Vice-Chair: Steve Kilner (Monroe Community College)

Secretary: Gary Raduns (Roberts Wesleyan College)

At-large member: Jeff Johannes (SUNY Geneseo)

Additional nominations will be taken during the Business Meeting.

REPORTS

1. Treasurer's Report – Spring 2016 – Gary Towsley

Seaway Section of the Mathematical Association of America

1. Balance as of 9/15/2015	\$15,663.41
2. Fall Meeting at St. Lawrence University	
Meeting Receipts	\$8,583.09
Meeting Expenses	\$8,551.93
Net	\$61.16
3. Speakers Expenses, Honoraria	\$100.00
5. MAA – Proceeds of Book Sale	\$25.74
6. Travel Support for Section Officer	\$250.00
7. Balance as of 3/01/2016	\$15,144.57

2. Minutes of the Executive Committee meeting, November 6-7, 2015

Present: Ryan Gantner, John Maceli, Charlie Ragozzine, Jim Conklin, and Jonathan Cox.

The committee approved the minutes of the Executive and Extended Executive Committee meeting of April 17-18, 2015. The minutes of the Business meeting are delayed due to the Secretary's office re-location.

Ryan Gantner, chair, deferred his report until New Business.

Gary Towsley attended the Governor's Meeting at MathFest in place of newly elected Jim Conklin. Gary welcomed Jim as our new governor and briefly reviewed his written report. The committee discussed some of the options under consideration for reorganization of the governance of the Association.

Gary Towsley also presented a written Treasurer's report. The report indicated an opening balance of \$16,710.29 on 3/1/2015 and \$15,663.41 on 9/15/2015 including a net -\$2072.52 for the meeting at Colgate University. The treasurer noted that this 'loss' for our anniversary meeting was expected.

First Vice Chair, Jonathan Cox, presented a written report featuring an outline of activities for this weekend's meeting, future venues, and a look ahead to the spring meeting at SUNY Geneseo.

Invited speakers at this meeting:

- Richard Cleary (Banquet speaker)
- Erica Flapan (Polya Lecturer)
- Hossein Shahmohamad (2013 Clarence Stephens Award recipient)
- Laura Person (Randolph Lecture)

Future Venues:

- April 15-16, 2016 SUNY Geneseo
- October 21-22, 2016 RIT
- March 24-25, 2017 SUNY Oswego
- Fall 2017 SUNY Broome
- Spring 2018 SUNY Brockport
- Fall 2018 Univ. of Toronto, Mississauga

Plans for Geneseo:

- Bob Rogers (Banquet speaker)
- Luise-Charlotte Kappe (Gehman Lecture)
- Margaret Morrow (2015 Clarence Stephens awardee)
- One additional to be determined

The Executive Committee would like to try concluding the Spring 2016 meeting with an afternoon invited speaker, but will not hold organizers to this if an appropriate speaker cannot be identified or if there are logistical obstacles.

Margaret Morrow has stepped down as editor of the Seaway Current. Ryan assembled the Current for this meeting and is searching for a new editor.

New Business

1. Charlie Ragozzine brought up two concerns regarding the Association:
 - a. Incorrect dues information was provided on printed dues notices.
 - b. Concerns regarding the sale of MAA mailing lists to publishers. That this is occurring is evidenced by a particular misspelling of names that only occurred with the MAA but now shows up in advertising material from publishers. Does the MAA have a privacy policy, and is there an opt-out for release to third parties?
2. Discussion of SUNY Seamless Transfer and Discrete Mathematics:
 - a. Some SUNY Mathematics Departments have put forth resolutions to not put Discrete Mathematics on the seamless transfer list. These courses are frequently used as introduction to proof courses at the 4-year institutions and have pre-requisites. At the 2-year campuses the course is oriented to a different audience with no pre-requisites.
3. Sandeep would like to step down as Second Vice Chair (term would end Spring 2017).
 - a. Ryan has had conversations with Steve Kilmer of Monroe Community College and he is prepared to accept nomination. An election to complete the term will be held in Spring 2016.
4. John Maceli would like to step down as the at-large member of the executive committee. Nominations will be sought.

The Executive Committee meeting adjourned at 4:25 and moved into the Extended Executive Committee Meeting.

Respectfully submitted,

Gary Raduns
Seaway Section Secretary

3. Minutes of the Extended Executive Committee, November 6-7, 2015

Present: Ryan Gantner, John Maceli, Charlie Ragozzine, Jim Conklin, and Jonathan Cox, Jane Cushman and Bob Rogers.

Student Program Report:

- The program will feature about 8 student papers and a panel for students on undergraduate research experiences.
- Team Trivia makes a return at this meeting, hosted by Blair Madore.

Gehman Lecture Committee: Written report. L.C. Kappe will present “Finite coverings: a journey through groups, loops, rings, and semigroups” as the Spring 2016 Gehman Lecturer.

Randolph Lecture Committee: The committee has an invitation out for the next Randolph Lecture.

Education Policy Committee: No report.

Distinguished Teaching Award Committee: No report, but a reminder that nominations are due February 1.

Nominations Committee: There are a number of current vacancies and positions to be filled at the spring meeting: Second vice-chair (nominee already identified), first vice-chair, at-large, and chair elect. It is also noted that the secretary and treasurer are past due for election/re-election.

The Extended Executive Committee also had discussion of crazy ideas—activities of the section perhaps beyond the semi-annual meeting, or to modify the meeting structure. Among the thoughts generated:

- a. Tie in local features and attractions with the meeting.
- b. Ask Randolph lecturer to speak only 35 minutes to allow 15 minutes of discussion before breaking for lunch or the next speaker.
- c. Invite more speakers who are early in their career.
- d. A summer conference or workshop, perhaps modeled on the summer topology festival at Cornell University.
- e. Mini-course or micro-course.
- f. How to engage more graduate students in the Section?
- g. Ask the Public Information Officer to take on social media role for the Section?

The Extended Executive Committee meeting adjourned at 6:02.

Respectfully submitted,

Gary Raduns
Seaway Section Secretary

4. Minutes of the Business Meeting, November 7, 2015

Called to order at 10:44 with approximately 20 in attendance.

Governor’s Report: Announcing the Association’s ongoing operating deficits and discussion of changes in the governance structure of the Association.

Secretary Report: None beyond the minutes as distributed.

Treasurer’s Report:

- Balance 3/1/2015: \$16,710.29
- Balance 9/15/2015: \$15,663.41
- The Section is in good financial health.
- The deficit, -\$2,072.52, for the meeting at Colgate University was less than anticipated.
- Follow-up discussion from the floor encouraged Section to support Project NExT participants from the Section in the National NExT program.

Program Chair Jonathan Cox thanked the local organizing team and program committee, especially local organizer Patti Fraser Lock. He also thanked Bob Rogers for his work arranging the next six locations:

- April 15-16, 2016 SUNY Geneseo
- October 21-22, 2016 RIT
- March 24-25, 2017 SUNY Oswego
- Fall 2017 SUNY Broome
- Spring 2018 SUNY Brockport
- Fall 2018 Univ. of Toronto, Mississauga

Speakers already identified for the Spring 2016 meeting are Bob Rogers, Luise-Charlotte Kappe, and Margaret Morrow.

The Student Program Committee highlighted student activities for the remainder of the day and presented a gift of appreciation to Blaire Madore for hosting the Team Trivia contest Friday night.

The Randolph Lecture Committee commented on Laura Person as the Randolph Lecturer at this meeting and solicits recommendations for the next year. The Randolph Lecture focuses on teaching and mathematics education with a primary focus on speakers from within the Section.

The Gehman Lecture Committee announced L. C. Kappe as the Spring 2016 Gehman Lecturer.

There was no report from the Education Policies Committee.

The Distinguished Teaching Award Committee solicits nominations (due Feb. 1).

The Nominating Committee solicits nominees for Second Vice-Chair, Chair-Elect, First Vice-Chair, and At-Large member of the Executive Committee. There are also a number of committee positions open.

Jeff Johannes, Liaison Coordinator indicated that we have liaisons for less than $\frac{1}{2}$ the schools in the Section. The gaps are primarily in Ontario and in the two-year colleges.

The position of Seaway Current editor is currently vacant.

Seaway NExT is recruiting participants. Also, Matt Koetz is stepping down as chair of the committee.

The Business meeting adjourned at 11:08.

Respectfully submitted,

Gary Raduns
Seaway Section Secretary

Section Notes

The Euler Society:

The Euler Society's 2016 conference is scheduled to take place from July 25-26 at Adelphi University in Garden City, NY. Information on the Euler Society's past conferences is available on their web site (<http://www.eulersociety.org>). The Euler Society is a history of math/science group, focusing mainly on the 18th century, and would be happy to welcome attendees or speakers from the Seaway Section that may want to come

down to the New York metro area for our conference. Feel free to contact Dr. Erik Tou (etou@uw.edu), Secretary of the Euler Society, with questions.

Upstate New York Inquiry-Based Learning Consortium:

The Seaway Section has had a number of events aimed at promoting Inquiry-Based Learning (IBL) techniques at their recent meetings. If you are interested in learning more about this teaching method you may be interested in a four-day IBL workshop to be held at Nazareth College in summer 2017. Funded by an NSF IUSE grant, the Nazareth workshop is one of the PRODUCT project workshops run through the Academy of Inquiry-Based Learning (iblworkshop.org) of California Polytechnic University. The workshop will be delivered by members of the Upstate New York IBL Consortium. While the dates and details are still TBA, we encourage you to look for this as the time draws nearer. If you would like to be certain you don't miss the registration deadlines (the summer 2016 PRODUCT workshops filled up very quickly), send e-mail indicating such to uny.ibl@gmail.com.



SUNY Broome C.C. Mathematics Department:

Tairi Mead is chairing the committee that has just finished creating a mathematics AS degree program for SUNY Broome. There will be a track for prospective math majors, and one for prospective statistics majors. This program has the great advantage of pulling together numerous courses that we already offer, preparing students more effectively for their upper undergraduate mathematics/statistics endeavors. We are looking for articulation agreements.

Luis Moreno's new textbook on real analysis is available at the MAA.org website. It is geared to lift students off from Calculus II into the level of learning and constructing proofs, investigating functions, series, modes of convergence, metric spaces and the infinite. "An Invitation to Real Analysis" has 600 exercises, many graphs and diagrams, and enrichment projects. Please consider it at the meeting at Geneseo!

Timmy Bremer presented a beginner's workshop in the spring on solving Rubik's cube. His quite adept at solving them and has a collection which includes cubes from $2 \times 2 \times 2$ up to $7 \times 7 \times 7$, a void cube, tetrahedral puzzles with 2, 3, and 5 layers, as well as a gear ball, an Impossiball, and a Square-1.

Tom Reid is presenting at the upcoming NYSMATYC conference in Kingston. The talk is entitled "There is Time for Fun in Math Class". He will present some tried and true fun examples and activities that take little class time but get the students talking, involved, and interested (one of them is a card trick using sequences).

The Department has begun implementing a new developmental math program that is a self-paced or "emporium" model, headed by Jean Krichbaum. Our program is condensed to two courses each containing six modules. The first course is a basic arithmetic and beginning algebra course. The second is an elementary algebra course. The results so far are encouraging. Full implementation of the program will commence in Fall 2016.



SUNY Fredonia Mathematical Sciences Department:

The Mathematical Sciences Department at Fredonia is very proud that Bob Rogers has been promoted to Distinguished Teaching Professor. As the Seaway Section knows well, he has been very involved in the leadership of the section. He has also been very involved in the leadership of the Association of Mathematics Teachers of New York State and has been the editor of the *New York State Mathematics Teachers Journal* for many years. He has worked hard to improve mathematics education at all levels for more than 25 years. In addition, he does a great job of teaching our students and has done outreach activities with students at several different high schools in the state.

After a second six-year stint as department chair, Joe Straight will be stepping down at the end of the summer and Julia Wilson will take over. Joe has provided strong leadership for the department and now will give his full attention to teaching our students. Julia will now provide us with exciting new leadership.

SUNY Potsdam Mathematics Department:

We are pleased to announce an Event Honoring Clarence F. Stephens on May 20th, 2016. We will celebrate his life and legacy and unveil a bronze plaque in his honor.



We were sorry to say good-bye to faculty member Derek Habermas, who has relocated to South Carolina, and who continues to teach mathematics and work in mathematics publishing. Derek was with our department from 2006-2015.

Department members Victoria Klawitter and Blair Madore were pleased to have their NYSED MSP grant renewed—which allows them to run summer workshops helping regional teachers get better acclimated with the Common Core standards.

The Department was pleased to be awarded a \$15,000 grant from Santander Bank in support of students studying Mathematical Origins in Mexico.

Department Alumnus Doug Van Nort (BA/MA SUNY Potsdam, MFA RPI, PhD Music Technology McGill) was awarded a five-year Canada Research Chair in Digital Performance. This is a \$500,000 grant spread over 5 years and is roughly equivalent to the US MacArthur Genius grant. In 2015 Doug joined York University's School of the Arts, Media, Performance & Design. He is cross-appointed to the Digital Media Program and the Department of Theatre.

SUNY Oswego Mathematics Department:

We are proud to announce that SUNY Oswego mathematics and meteorology double major Tyler Pelle of Sparta, New Jersey, has been awarded the SUNY Chancellor's Award for Student Excellence. Additionally, Tyler has won the Louis R. DeRitter Senior Award from SUNY Oswego's Math Department.



The department is also pleased to welcome Sarah Mall Hanusch, starting with the Fall 2016 semester. Sarah is joining us from the University of Texas at Austin, after earning a PhD in Mathematics Education with a specialization in undergraduate education. Sarah also earned a M.S. in mathematics with a specialization in 4-dimensional topology and mathematics education.

Fall Meeting:

October 21-22, 2016, at Rochester Institute of Technology, Rochester, NY.

Links

Seaway Section Website: <http://people.rit.edu/maacway/>

Governance: <http://people.rit.edu/maacway/governance.html>

MAA: <http://www.maa.org/>

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 (elizabeth.wilcox@oswego.edu). 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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