

Spring 2020

Allegheny Mountain Section of the Mathematical
Association of America

Allegheny Mountain Section Newsletter



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SPRING SECTION MEETING AT GROVE CITY COLLEGE



Mark your calendars! The Spring 2020 Allegheny Mountain Section Meeting will be held at Grove City College, April 3-4. We are excited to be cohosting the meeting with Kappa Mu Epsilon's Great Lakes Region this year. As a result, we are expecting to have a large student presence with oodles of student talks. There should be something of interest for everyone. In addition to KME joining us, we have three exciting speakers lined up: **Carol Schumacher** from Kenyon College, former Vice President of the MAA, **Tom Edgar** from Pacific Lutheran University, editor of the MAA's *Math Horizons*, and **Samuel Hansen** who is the Mathematics & Statistics

Librarian for the University of Michigan as well as the host of the Relatively Prime podcast. Their talk titles and abstracts can be found on pages 9 and 10.

We have several things planned for students this year. On Friday, there will be a free pizza dinner followed by a student problem-solving competition. Later that evening features a larger than usual student talk session. To top the evening off, a desert reception will be held immediately after the student talks. On Saturday, the Section hosts a career panel for students in which four exciting panelists are lined up to discuss how mathematics plays a role in their jobs. Additional information can be found on page 10. Please encourage your students to attend.

We urge all MAA members to attend our Section Business Meeting on Saturday morning. It's a wonderful way to contribute to our section as well as catch up with friends and colleagues.

Once again, a discount will be offered for early online registration. To register for our Spring Meeting, just click on the link <https://forms.gle/D4CWP9XTdVyc8NpV7>. We hope to see you at Grove City!

SECTION REPRESENTATIVE TO THE MAA CONGRESS: Pam Wovchko



Pam Wovchko of West Virginia Wesleyan College, Representative to the MAA Congress

“... you may want to log in to MAA Connect, adjust your communication settings for each community, and explore the MAA Communities. You may even discover a new community you want to join.”

Greetings! This is my final newsletter report to you as the Allegheny Mountain Section Representative to the MAA Congress. Very soon you will be receiving the ballot for our new representative. I encourage you to vote in the election.

Since we no longer have Congress meetings at the Joint Mathematics Meetings, I do not have any new business updates for you. As you are aware, MAA Connect has launched to all MAA members. One of the major advantages for us as a section is that messages may be sent directly from the Allegheny Mountain Section to you. This should allow more timely communication, particularly in the months leading up to the spring

section meeting. If you haven't already done so, you may want to log in to MAA Connect, adjust your communication settings for each community, and explore the MAA Communities. You may even discover a new community you want to join.

As always, please consider giving a talk at the Spring Section Meeting at Grove City and consider nominating a colleague for a section award (teaching, service, and mentor awards). Nominations are accepted year-round, so if you miss the deadline, don't worry. We will consider the nomination for next year.

Have a great Spring semester. I hope to see you in April.
Pam Wovchko



FROM THE CHAIR: Pam Richardson

Spring semester is always daunting for me. My workload at my home institution dramatically increases in the spring, and my students and colleagues are often less enthusiastic about coming to class/work (due at least in part to the cold, dreary winter weather). However, this particular spring term brings some exciting things for the Allegheny Mountain Section, so I am looking forward to it more than usual.

First, we are delighted to welcome the members of the Great Lakes region of Kappa Mu Epsilon to our Section Meeting this year! Our annual conference will be held on April 3-4, 2020, at Grove City College, and it will be a joint meeting between the MAA Allegheny Mountain Section and the Great Lakes Region of KME. We expect to see an increase in presentations at the conference, particularly in student presentations, and we are excited to interact with math folks from a larger geographic area. More details about the meeting program, travel information, and registration information can be found in this newsletter.

I am also looking forward to better communication with the Allegheny Mountain Section members through the MAA's new community platform,

MAA Connect. If you are a member of the Section, you should already have access to the features in MAA Connect. The platform should help to streamline communication between the members and the Section officers, and it will allow us to have discussions and share resources with the entire Section. I hope that we can use MAA Connect to build a stronger community in the Allegheny Mountain Section. If you haven't already done so, please introduce yourself to the rest of the Section in MAA Connect!

Finally, I want to thank every MAA member who, at Section or the national level, has served as an officer, served on a committee, participated in NExT, or nominated someone for an award. The MAA relies on the voluntary contributions of its members, and the work that you all do is greatly appreciated. If you have not yet been able to participate in these activities but are interested in doing so, please feel free to reach out to me. I am happy to discuss ways in which you can be involved.

Have a wonderful winter/spring, and I hope to see all of you at Grove City in April!



Pam Richardson of Westminster College, Section Chair

"The MAA relies on the voluntary contributions of its members..."



SEEKING NOMINATIONS FOR AWARD RECIPIENTS

2019 Allegheny Mountain Section Distinguished Teaching Award

The criterion for the Annual Allegheny Mountain Section Distinguished Teaching Award is a record of extraordinary success in teaching, a record of teaching effectiveness that can be documented, and an ability to foster curiosity and generate excitement about mathematics. It is preferable to have an award recipient whose teaching influence extends beyond their own institution. The nominee should be a member of the MAA, must teach at an institution within the section, and should have at least five years of teaching experience in a mathematical science.

Teaching is to be interpreted in its broadest sense, not necessarily limited to classroom teaching (it may include activities such as preparing students for mathematical competitions at the college level, for example, the Putnam Prize Competition or the Mathematical Contest in Modeling, or attracting students to become majors in a mathematical science or to become Ph.D. candidates).

Please send your nomination, with a description of how the nominee meets the criterion, by March 6 2020 to:

Courtney Nagle, Penn State Behrend
crt12@psu.edu



2019 Allegheny Mountain Section Service Award

The criterion for the Annual Allegheny Mountain Section Service Award is a consistent record of excellence in service to the section over a period of time. In this context "service" is interpreted in a broad sense to include holding office, coordinating contests, organizing sessions, acting as a panelist, speaking at sessions, acting as the coordinating host for a meeting, or participating in any other activity that contributes to the well-being of the Section. Please send your nomination, with a description of how the nominee meets the criterion, by March 6 2020 to:

Pam Wovchko, West Virginia Wesleyan College
wovchko_p@wwvc.edu

2019 Allegheny Mountain Section Mentor Award

The Mentor Award has been a part of the Allegheny Mountain Section since the year 2000. A nominee should have made significant contributions to the development of undergraduate students in mathematics as scholars. This includes, but is not limited to, encouraging student participation in MAA activities and advising students who make presentations at the Section meetings. Please send your nomination with a description of how the nominee meets the criteria, by March 6 2020 to :

Jared Burns, Seton Hill University
jburns@setonhill.edu

SECTION NEXT REPORT

Kim Roth, Juniata College and John Tolle, Penn State DuBois

Our Spring 2020 Section NExT meeting will take place Saturday afternoon, April 4 (beginning with lunch at 1:00), following the close of the Spring Meeting, at Grove City College, Grove City, PA. As we did last year, we are scheduling the workshop on Saturday afternoon to accommodate junior faculty who do not wish to miss or cancel their Friday classes. We therefore encourage senior faculty to inform junior faculty in their department of the opportunity to attend the workshop in April, and remind them that attending will not disrupt their regular schedule.

Our Spring workshop, conducted by Carolyn Cuff of Westminster College, is called "Resampling: What it Is and How You Can Incorporate it into

Your Introductory Statistics Course." You can sign up at the same time as you register for the Spring Section Meeting, using this link: http://sections.maa.org/allegHENY/annual_meeting_2020/meeting2020.php

The description is as follows:

Randomization and bootstrapping are forms of resampling and relatively new to introductory statistics. Research has shown that teaching the concepts helps students understand the inference process. Come and learn about resampling, why it helps students understand inferential statistics, and work through two classroom ready modules.

SECTION EXECUTIVE COMMITTEE ELECTION

The following three officers will be elected during the business meeting at the 2020 Spring Section meeting at Grove City College: Chair-Elect, Second Vice-Chair, and Treasurer. The nominating committee, consisting of Kim Roth (Chair), Tom Cuchta and Kate Overmeyer, is pleased to present the following candidates for these positions.

Chair-Elect

Shelly Bouchat
John Tolle

Treasurer

Tami Lakins

Second Vice-Chair

Josh Ballew
Stephen Deterding



CANDIDATE BIOGRAPHIES



Shelly Bouchat, Indiana University of Pennsylvania — Candidate for Chair-Elect

Academically, I grew up in the Allegheny Mountain Section. From 2000-2003 I was an undergraduate student at the University of Pittsburgh at

Johnstown. I was lucky enough to go to some section meetings during this time. I then went to graduate school at the University of Kentucky, but in 2008 I rejoined the Allegheny Mountain Section when I accepted a job at Slippery Rock University. Then in 2014, I accepted my current job at Indiana University of Pennsylvania, where I am an associate professor in the Mathematical and Computer Sciences Department. During my time in the Section, I have served on several award committees, as well as having served as the Director of E-Communications for eight years. Through this service, I learned a lot about what goes in to organizing our Section meetings and making them run smoothly. I also actively participated in Section NExT during the earlier part of my career. I would love the opportunity to serve as chair of the Section, and I hope you will consider voting to elect me to this position.



John Tolle, Penn State DuBois — Candidate for Chair-Elect

John Tolle (Ph.D. 1996, University of Kentucky) is Instructor in Mathematics at Penn State DuBois, and presently co-coordinator of Section NExT for the Allegheny Mountain Section. His mathematical interests are varied, leading to publications in diverse areas such as voting theory, differential equations, and mathematics pedagogy. He has been a member of MAA for 18 years, involved in the Allegheny Mountain Section for all of those years, giving many talks at section meetings, and in recent years, bringing some students along, three of whom switched their majors to mathematics after attending a section meeting.

Tolle has been a section officer in the past, serving as Second Vice Chair and First Vice Chair, and has also served his campus on the Enrollment Management Team, the Campus Green Team, as Faculty Congress Chair, Faculty Congress Secretary, and coordinator of the Honors Program.

Tolle is interested in curriculum development and has created 4 entirely new courses over his career, two of which run regularly at Penn State DuBois and are geared toward Engineering students. These courses offer guided discovery of mathematical methods beyond the usual curriculum.



CANDIDATE BIOGRAPHIES



Tami Lakins, Allegheny College — Candidate for Treasurer

Tami Lakins is Professor of Mathematics at Allegheny College in Meadville, PA. She received her B.S. in 1985 and her M.S. in 1987 from Western Illinois University, and she earned

her Ph.D. in 1993 from the University of Illinois at Urbana-Champaign. She came to Allegheny College in 1995, following a two-year teaching postdoc at Dartmouth College. Her mathematical area of interest is computability theory. Tami has served the Allegheny Mountain Section MAA as Second Vice-Chair (2000-01), First Vice-Chair (2001-02), Chair-Elect (2002-03), Chair (2003-05), Section Governor (2011-14), and Interim Newsletter Editor (2014-15). She was a 1995-96 national Project NExT Fellow (green dot), and she helped to organize the Allegheny Mountain Section NExT in 2000. She served as Co-Coordinator of Section NExT from 2000 to 2003, and from 2008 to 2012. Nationally, Tami has served on the MAA Basic Library List Committee in 2006-2016, serving as Chair of this committee from 2009 to 2016. Currently, she is an Associate Editor on the MAA Classroom Resources Editorial Board. She received the Allegheny Mountain Section Service Award in 2009.



Josh Ballew, Slippery Rock University — Candidate for Second Vice-Chair

I am an assistant professor at Slippery Rock University. I grew up in rural Maryland and earned my bachelor's degree from St.

Mary's College of Maryland with a double major in mathematics and physics, becoming a first-generation college graduate. I earned my Ph.D. in Applied Mathematics and Statistics, and Scientific Computation from the University of Maryland College Park. Before my position at Slippery Rock, I was an NSF Postdoctoral Associate at Carnegie Mellon University. My research is in the analysis of nonlinear partial differential equations. I am a member of the Peach '18 cohort of Project NExT. This past fall, I served as a local co-coordinator for the Section NExT meeting at Slippery Rock University. I look forward to continuing to serve the MAA Section in the position of Second Vice Chair.



Stephen Deterding, West Liberty University — Candidate for Second Vice-Chair

Stephen Deterding is an assistant professor at West Liberty University, where he has been since 2018. He graduated with

a Bachelor of Science in Mathematics and Applied Mathematics at Marshall University, and received a Master of Arts in Mathematics and a Ph.D. in mathematics both from the University of Kentucky. His research interests are functions of a complex variable, in particular rational approximation on the complex plane.



GROVE CITY MEETING SCHEDULE



ALLEGHENY MOUNTAIN SECTION, MAA / Kappa Mu Epsilon Great Lakes Region
Annual meeting, April 3 & 4, 2020
Grove City College, Grove City, PA

Schedule of Events

Friday, April 3, 2020

- 1:30 – 2:30 Section Officer's Meeting – *Rathburn Hall Seminar room*
2:30 – 4:00 Registration – *HAL (Hall of Arts and Letters) atrium, book sales in HAL 109*
3:55 Welcome from Grove City College
4:00 – 5:00 Invited Address – *TLC (Technological Learning Center) Auditorium*
Carol Schumacher, Kenyon College
All Tangled Up
5:00 – 5:30 Kappa Mu Epsilon meeting – *TLC Auditorium*
5:00 – 5:45 Registration – *HAL Atrium*
5:00 – 10:00 Book Exhibits – *HAL 109*
5:15 – 6:30 Dinner and Awards – *Old MAP South Dining room*
5:30 – 6:15 Student Pizza Dinner – *STEM Hall Lower Lobby and room 051*
6:15 – 7:00 Student Problem Competition – *STEM 051*
6:30 – 7:30 Registration – *HAL Atrium*
7:15 – 9:10 Student Talks – *HAL rooms 112, 114, 116, 204, 206, 212, 214, 216*
9:15 – 10:00 Dessert Reception – *STEM Atrium (main floor)*

Saturday, April 4, 2020

- 7:30 – 8:45 Breakfast – *Rathburn Hall, Morledge Room*
8:00 – 8:45 Section Business Meeting – *Rathburn Hall, Morledge Room*
8:00 – 9:00 Registration – *HAL Atrium*
8:00 – 12:00 Book Exhibits – *HAL 109*
9:00 – 10:00 Invited Address – *HAL, Sticht Lecture Hall*
Tom Edgar, Pacific Lutheran University
Find a Problem that Sustains You
10:15 – 11:30 Faculty Talks – *HAL rooms 108, 112, 114, 116, 204, 206, 212, 214, 216*
10:15 – 11:30 Career Panel for Students – *HAL, Sticht Lecture Hall*
11:45 – 12:45 Invited Address – *HAL, Sticht Lecture Hall*
Samuel Hansen, University of Michigan
Can you tell me a story? - Why and How we should tell more stories in mathematics
12:45 Closing Remarks and Prizes – *HAL, Sticht Lecture Hall*

Section NExT Activities:

- 1:00 – 1:45 Section NExT Lunch – *Rathburn Hall Seminar room*
1:45 – 3:45 Section NExT Workshop – *Rathburn Hall Seminar room*

INVITED SPEAKERS: TALK TITLES & ABSTRACTS



Carol Schumacher

Title: All Tangled Up

Abstract: Toys have inspired a lot of interesting mathematics. The Spirograph™ helps children create lovely curves by rolling a small circle around the inside or the outside of a larger circle. These curves are called hypotrochoids and epitrochoids and are special cases of mathematical curves called roulettes. A roulette is created by following a point attached to one curve as that curve “rolls” along another curve. Another children’s toy, the Tangle™, inspired some students and me to investigate roulettes that we get by rolling a circle around the inside of a “tangle curve,” which is made up of quarter circles. The resulting roulettes we named “tangloids.” In this talk, we will look at many pretty pictures and animations of these curves and discuss some of their interesting properties. As a bonus, I

will discuss the nature of generalization, which is very important in mathematics.



Tom Edgar

Title: Find a Problem that Sustains You

Abstract: How do you stay engaged with mathematics once you aren't required to be engaged? I'll take you on my own personal journey of encountering a problem as an undergraduate that has sustained me as a math enthusiast for the past twenty years to my current role as an undergraduate mentor. Along the way, we'll discuss a variety of intriguing and accessible mathematical structures, some classical theorems that many undergraduates won't see in the standard curricula, and some newer, related results proved primarily by teams of undergraduates over the past seven years. I'll also mention my strategies for finding such a problem, with an emphasis on the people involved and

the role of time. The problems we will investigate have intrigued me and other professional mathematicians but have also provided positive mathematical experiences for those who haven't chosen to pursue mathematics as a profession.



INVITED SPEAKERS — CONTINUED

Samuel Hansen

Title: Can you tell me a story? - Why and How we should tell more stories in mathematics

Abstract: Mathematics has a well known problem, many people just do not like it. Some may say this is simply because some people are mathematical and some are not, but we know that is not really true. The fact is mathematics is failing to engage a wide swath of the population in our discipline and we have to do something to fix this if we ever hope to show people just how awesome it is. This talk will argue there is one simple way to accomplish this task: TELL MORE STORIES!



Stories are the way we understand the world. They are how we best connect with new ideas and people who are not ourselves. In this talk Samuel Hansen will discuss why stories are just the thing to help us engage people, especially self-proclaimed non-mathematical ones, with our beloved discipline. Then Samuel will discuss how to use different narrative structures to effectively tell mathematical stories, using examples from their mathematical podcast Relatively Prime.

SPRING MEETING CAREER PANELISTS

We are very excited to offer a career panel for students at our Spring Meeting this year. Our panelists will discuss how they use mathematics and/or how it plays an important role in their job. The career panel will be held concurrently with the faculty talks on Saturday morning.

Our four panelists are as follows: Sarah Veney, Client Relationship Specialist at Management Science Associates in Pittsburgh; Erica Knoll, Actuarial Analyst at Erie Insurance; Dr. Christy Crute, Executive Director, Graduate and Online Programs, Grove City College; Jessica Marsh, Data Conversion Specialist, Grant Street Group.

ALLEGHENY MOUNTAIN SECTION SOCIAL MEDIA ACCOUNTS

Don't forget about our Allegheny Mountain Section presence on social media! Please follow our Twitter account (@alleghenymaa or at <https://twitter.com/alleghenymaa>) and our Facebook page (@alleghenymaa or at <https://www.facebook.com/alleghenymaa/>). Additionally, we would like everyone to use the hashtag #AlleghenyMAA for discussion about our section.

Content for reposting to our social media accounts is always welcome -- please send any ideas to our Director of E-Communications, Tom Cuchta (tcuchta@fairmontstate.edu or <http://tomcuchta.com>).

SECTION STUDENT NEWS

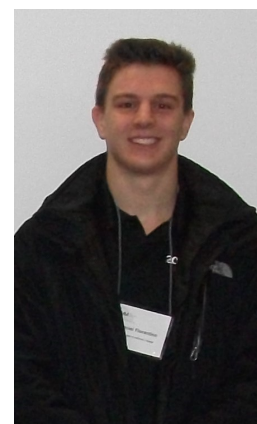


Washington & Jefferson College students presented the following talks at the Joint Mathematics Meetings in January.

- ◇ **Cheryl Ferguson** (Wong): *Check Digit Schemes and the Dihedral Group*
- ◇ **Cecilia Fitzgerald** (Wong): *The Path from Fermat Point to Steiner Points*
- ◇ **Daniel Florentino** (Higginbottom): *More on Equilibrium patterns in the Three-Person Candy Sharing Circle*
- ◇ **Jessica Gibson** (Wong): *A Sequence of Means and Generalization*



Cheryl Ferguson, Cecilia Fitzgerald and Jessica Gibson



Daniel Florentino

UPCOMING MEETING — MATHFEST



See you in Philadelphia!

July 29-Aug. 1, 2020



MAA MATHFEST

FOUND MATH

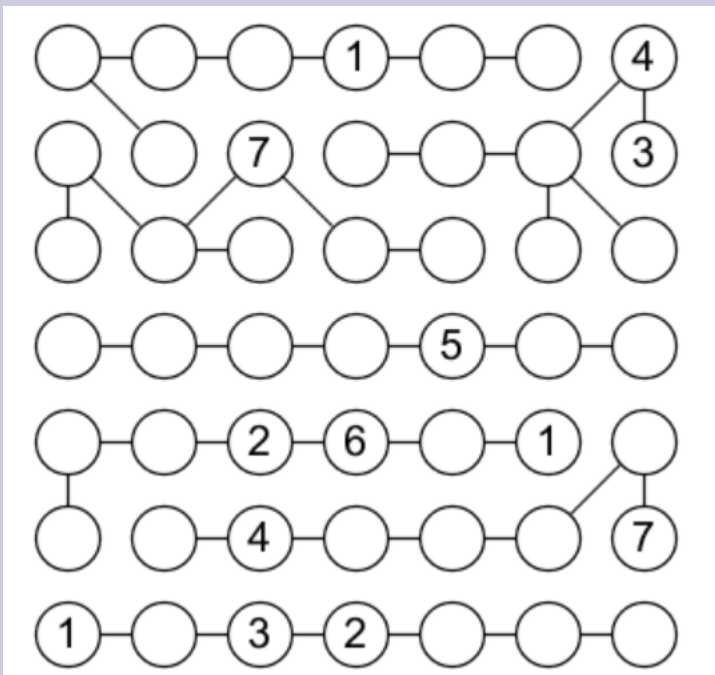


MAA Found Math Photo:

An application of a conformal mapping turns a photo of a stained-glass window into a colorful spiral. Created by Seb Perez-Duarte.

Found Math is a photo gallery of mathematical images on the MAA website.

<https://www.maa.org/community/columns/maa-found-math>



SPRING PUZZLE CHAIN SUDOKU

Fill each circle with a number from 1 to 7 inclusive, so that each row, column and chain uses each digit exactly once.

Puzzle from <http://innoludic.com/>

Do you have any exciting news you would like to share? If so, please send it to me! We would love to hear what you and/or your students are doing within our section.

Newsletter Editor

Kim Jones

Washington & Jefferson College

kjones@washjeff.edu