Spring 2024

Allegheny Mountain Section of the Mathematical Association of America

Allegheny Mountain Section Newsletter

INSIDE THIS ISSUE

FAIRMONT STATE UNIVERSITY™

SPRING SECTION MEETING HOSTED BY FAIRMONT STATE

The Allegheny Mountain Section's Spring Meeting will be held on April 5 and Saturday, April 6, 2024 at Fairmont State University. Our three invited speakers are: **Sarah Greenwald**—MAA Polya Lecturer from Appalachian State University, **Lisa Marano** - Chair of the MAA Council on Sections from West Chester University, and **Pamela Harris** from University of Wisconsin-Milwaukee. You can find their talk titles and abstracts on page 6 in this newsletter.

There will be an Italian pasta buffet Friday evening as well as a free pizza dinner for students. Online registration is $30 for MAA members and $35 for non members through March 29. There will be a $10 upcharge for registration in person at the meeting. All attendance registration is now completed through a national MAA website (even on-site). As always, students can attend for free. More information, including how to register, can be found on our conference webpage here. Your registration fee helps to support honorariums, Section NExT workshops, student activities and many other endeavors.

Please consider attending our Section Business Meeting Saturday morning. It's a great time to catch up with old friends and meet new ones while at the same time contributing to our section!

SECTION REPRESENTATIVE TO THE MAA CONGRESS:
John Thompson

John Thompson of University of Pittsburgh at Johnstown,
MAA Congress Representative

"The MAA provides many opportunities for the mathematical community including resources for curriculum development and professional development activities."

Greetings from Pitt-Johnstown! The snow is melting and we eagerly await the flowers of spring. As such, we look forward to the fast, approaching Allegheny Mountain Section Spring Meeting at Fairmont State university in West Virginia. As the representative of the Allegheny Mountain Section in the MAA Congress I want to briefly highlight some of the activities at the national level that the MAA undertakes to support the mathematical community.

The MAA provides many opportunities for the mathematical community including resources for curriculum development and professional development activities. Curriculum resources include "Classroom Capsules" which consist of articles from MAA publications that can be utilized when teaching and the CUPM (Committee of the Undergraduate Program in Mathematics) Guide to designing curricula for undergraduate students. Professional Development include Project NExT for new or recent Ph.D's. This program is designed to provide in-person participants a network of peers and mentors. For an online experience, OPEN Math is project focusing on the development of undergraduate mathematics instructors.

Additionally, the MAA has a myriad of "councils" and "committees" that constitute the heart of the Association's service to the mathematical community. There are typically many opportunities for individuals to serve and help support the mathematical community. Thus, if you desire to increase your "service portfolio" please feel free to contact me (jwt01@pitt.edu) and I would be delighted to pass along your information to the national apparatus.

MAA
MATHEMATICAL ASSOCIATION OF AMERICA

FROM THE CHAIR: Daniel Shifflet

The annual spring meeting – it is one of the oldest activities of the Allegheny Mountain Section. It is also one of the few explicitly stated requirements of sections by the MAA. Other named requirements include keeping financial records and publishing a regular newsletter, but the annual meeting is still key. It is where we share our work, support our students, and swap stories that only others in mathematics would truly understand.

From 2020 through 2022 the spring meeting was a shell of its former self. The executive committee did our best to put on respectable virtual conferences, but we know it wasn't the same. There are some things that just can't be replicated virtually. The comradery wasn't as strong, the activity wasn't as organic, and the general murmur that usually surrounds a meeting just … wasn't. Zoom can be eerily silent sometimes.

That all changed last spring. The 2023 meeting at PennWest Edinboro was a welcome return to the past. It was great seeing (not-so-) old faces again. It was great witnessing the students pick up their work right where they left off. And it was great to walk around the grounds of another campus at last. It was almost like nothing had changed. Almost.

Perhaps this letter is already too late. Like everything with time, the last vestiges of the 'COVID life' seem to be fading from memory. Did we all really start baking sourdough bread? Did I really need all these masks? Was Tiger King really a thing? It often seems 'forgetting' is easier than 'remembering'.

Something similar happened at Edinboro. Because the last in-person meeting was at Shepherd in 2019, there was a lot of time to forget things. Perhaps this corresponded to minor hiccups at the meeting, if you knew where to look. Overall things went well and I credit a lot of hard work behind the scenes. The Allegheny Mountain Section Executive Committee is a very dedicated group that I am proud to be part of.

All of this means the next meeting will be smoother. We are more prepared for Fairmont State in 2024. In fact, we are so confident that we are one of the first sections utilizing the MAA's new registration system for the event. Will this cause new hiccups? Perhaps. But as we saw last year, a couple hiccups do not negate success. I hope to see you at Fairmont!

Daniel Shifflet of PennWest University, Section Chair

"The 2023 meeting at PennWest Edinboro was a welcome return to the past. It was great seeing (not-so-) old faces again. It was great witnessing the students pick up their work right where they left off. And it was great to walk around the grounds

SEEKING NOMINATIONS FOR AWARD RECIPIENTS

2024 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 must be a member of the MAA, 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 15, 2024 to:

Adam Roberts, PennWest Clarion
aroberts@pennwest.edu

2024 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 15, 2024 to:

Tamara Lakins, Allegheny College
tlakins@allegheny.edu

2024 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 criterion, by March 15, 2024 to:

Kimberly Burch , Indiana University of Pennsylvania
kjburch@iup.edu

SECTION EXECUTIVE COMMITTEE ELECTION

The section's Nominating Committee for 2024-25 consists of John Thompson (chair), Kuei-Nuan Lin, and Tim Flowers. Elections will be held electronically in conjunction with the spring business meeting. The Nominating Committee is pleased to present the following slate of candidates for the positions of Chair-Elect, Second Vice-Chair, and Secretary. Additional nominations will be accepted by the nominating committee until March 15 or until the creation of the ballot. Anyone with questions or wishing to make a nomination can contact the Nominations Committee at jwt01@pitt.edu.

Chair-Elect: John Tolle

Second Vice-Chair: Whitney Liske

Secretary: Samantha Allen

CANDIDATE BIOGRAPHIES

John Tolle, Pennsylvania State University-Dubois Candidate for Chair-Elect

John Tolle is an Associate Teaching Professor of Mathematics at Penn State DuBois. He has been a member of the MAA since 1996 and active in the Allegheny Mountain Section since 2006, serving as First Vice Chair, Second Vice Chair, and co-coordinator of Section NExT from 2017 to 2023. He received the Meritorious Service Award from the section in 2023. In addition, Tolle has thrice been elected as Chair of the DuBois campus Faculty Congress and served a term as Secretary. From 2010 to 2016 he was also coordinator of the Honors Program at Penn State DuBois.

Samantha Allen, Duquesne University Candidate for Secretary

Samantha Allen is an Assistant Professor of mathematics at Duquesne University in Pittsburgh, PA. She teaches courses in the calculus sequence as well as upper level courses for majors. She particularly enjoys teaching History of Mathematics, as it gives her an opportunity to explore different cultures and areas of math with her students. Prior to Duquesne, Samantha completed her PhD at Indiana University and pursued postdoctoral work. Her current research interests lie in geometric topology, specifically knot theory in dimensions 3 and 4, and she enjoys involving undergraduate students in this work.

Whitney Liske, St. Vincent College Candidate for Second-Vice Chair

Whitney Liske is an Assistant Professor of Mathematics at Saint Vincent College in Latrobe, PA since August 2019. She received her B.A. in Mathematics from the College of Saint Benedict in 2013 and her Ph.D. in Mathematics from the University of Notre Dame in 2019. In 2019 Whitney was a Project NExT Fellow (Silver Dot) where she organized a panel on Mastery Based Grading. Whitney has really enjoyed teaching at a small liberal arts college. Her typical courses include Calculus, Differential Equations, and Linear Algebra which have been taught in a variety of instructional formats. She considers herself a life-long learner and is particularly interested in learning techniques of instruction and assessment that will help her students learn and retain course information. Whitney would really enjoy being more involved in the Allegheny Mountain Section of the MAA.

INVITED SPEAKERS: TALK TITLES & ABSTRACTS

Sarah J. Greenwald
MAA Polya Lecturer

Title: Mathematical Morsels from *The Simpsons* and *Futurama*

Abstract: Did you know that the animated shows The Simpsons and Futurama contain hundreds of humorous mathematical references? We'll explore the content and educational value of related mathematical conjectures, theorems, and people during an interactive talk. Popular culture can reveal, reflect, and even change how society views mathematics, and with careful consideration of the benefits and challenges, these programs can be an ideal source of fun ways to introduce important concepts and to reduce math anxiety. A calculator and writing utensil will be useful. For more information, check out SimpsonsMath.com and https://cs.appstate.edu/sjg/futurama/

Lisa Marano

Title: Mathematics and Service Learning

Abstract: First-year seminars, learning communities, service-learning courses, undergraduate research projects, and capstone experiences are among a list of high-impact educational practices compiled by George Kuh (2008), which measurably influence students' success in areas such as student engagement and retention. It is recommended that all college students participate in at least two of these HIPs to deepen their approaches to learning, as well as to increase the transference of knowledge (Gonyea, Kinzie, Kuh, & Laird, 2008). In Mathematics, if a student participates in service-learning, it is typically in the form of tutoring, in conjunction with a school or with an after-school program, or consulting for a non-profit by modeling or performing statistical analysis. I discuss a number of service-learning projects which were developed for mathematics courses, neither of which involves these traditional opportunities. I also describe my current research project which has potential impact on my community and yours.

Pamela Harris

Title: Finding Needles in Haystacks: Boolean intervals in the weak order of S_n

Abstract: Finding and enumerating Boolean intervals in $W(S_n)$, the weak order of symmetric group S_n, can feel like trying to find needles in a haystack. However, through surprising connection to the outcome map of parking functions we provide a complete characterization and enumeration for Boolean intervals in $W(S_n)$. We show that for any $\pi \in S_n$, the number of Boolean intervals in $W(S_n)$ with minimal element π, is a product of Fibonacci numbers. This is joint work with Jennifer Elder, Jan Kretschmann, and J. Carlos Martínez Mori

SPRING SECTION MEETING SCHEDULE

ALLEGHENY MOUNTAIN SECTION
MAA Annual Meeting, April 5 & 6, 2024
Fairmont State University, Fairmont, WV

Schedule of Events

Friday April 5, 2024

2:30 – 3:30	Section Officer's Meeting
3:15 – 3:50	Registration
3:55 – 4:00	Welcome Remarks from Fairmont State University
4:00 – 5:00	**Invited Address - Pamela Harris, University of Wisconsin-Milwaukee** "Finding Needles in Haystacks: Boolean intervals in the weak order of Sn"
5:00 – 5:15	Registration
5:30 – 6:45	Dinner and Awards
5:30 – 6:15	Student Pizza Dinner
6:15 – 7:00	Student Problem Competition
7:15 – 9:10	Student Talks

Saturday April 6, 2024

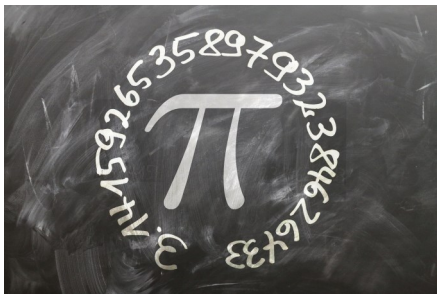
7:45 – 8:30	Registration
8:30 – 9:30	**Invited Address - Lisa Marano, West Chester University** "Mathematics and Service Learning"
9:30 – 10:100	**Section Business Meeting**
10:20 – 11:35	Faculty Talks
11:45 – 12:45	**Invited Address - Sarah Greenwald, MAA Polya Lecturer** "Mathematical Morsels from *The Simpsons* and *Futurama*"
12:45 – 12:55	Closing Remarks and Prizes

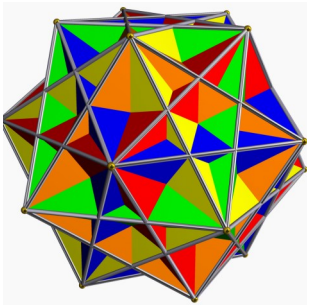
Section NExT Activities

1:00 – 1:30	Section NExT Lunch
1:30 – 2:45	Section NExT Workshop

SPRING MEETING HOTEL INFORMATION

Rooms have been reserved at the Fairfield Inn & Suites in Fairmont - phone (304)367-9150. Be sure to ask for the "FSU math conference" block or use the group code FSUS.





SECTION NExT REPORT
Kristen Pueschel, Penn State New Kensington and Kuei-Nuan Lin, Penn State Greater Allegheny

The spring Section NExT workshop will be held after the Spring Meeting on Saturday April 6th at Fairmont State University, Fairmont, WV. All faculty are welcome! It should be an outstanding workshop – we hope that you will join. The workshop will be from 1:30PM-2:45PM, with a lunch of boxed sandwiches ahead of the workshop, from 1:00-1:30 PM. Seasoned faculty are asked to pay for their lunch ($11), while faculty within their first 5 years of full-time teaching are invited to join at no cost. This year, participants can register as part of the Spring Meeting registration. We will also have a remote option available for those that are unable to attend the Spring Meeting, but still wish to participate.

Pamela Harris will run a workshop on "Developing Mathematics Research Problems for Undergraduates". Research experiences in mathematics have become ubiquitous in undergraduate education. However, they have also become extremely competitive and often inaccessible to those who may most benefit from the experience. In this workshop, I provide ways in which faculty can incorporate research opportunities into their undergraduate courses through collaborative teamwork. I will also give advice on how to create open questions and how to evaluate and provide feedback on students' written work. The goal is for faculty to leave with some ideas and practical ways in which they can incorporate research in their courses.

If you have colleagues that are new to the Section or new to full-time teaching, please encourage them to sign up for the Section NExT mailing list by sending an email to Kuei-Nuan Lin (linkn@psu.edu) or Kristen Pueschel (klp65@psu.edu). New colleagues may also be interested in applying for the national MAA Project NExT program. Applications are open through April 15th. To learn more, go to https://www.maa.org/programs-and-communities/professional-development/project-next.

BARBARA T. FAIRES
ALLEGHENY MOUNTAIN SECTION COLLOQUIUM SERIES

The Colloquium Committee (Kristen Pueschel, Tim Flowers, and Joshua Sasmor) is pleased to report a great colloquium on 20 February 2024 by Dr. Harvey Diamond of West Virginia University who spoke about "Insights and Revelations: Computational exploration with MATLAB ".

We are always seeking future speakers for the Allegheny Mountain Colloquium, so if you are interested in giving a talk or know of someone employed in our section who might give a great talk, then please contact Kristen Pueschel at klp65@psu.edu. Stay tuned and check our Section webpage for more details (https://www.alleghenymtn.maa.org/colloquium).

UPCOMING MEETING — MATHFEST

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 (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, Richard Ligo (ligo001@gannon.edu)

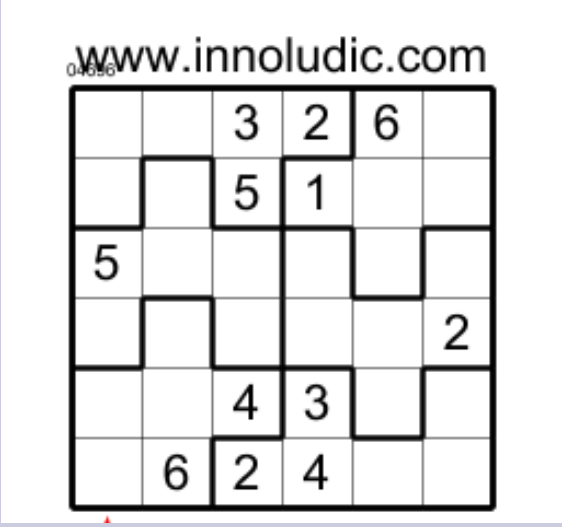
FOUND MATH

MAA Found Math Photo:

Photo by Linda Bollman.
Fixture in a restaurant in Columbus, Ohio taken during the Ohio Math Teachers' Circle Summit.

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

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



SPRING PUZZLE ROUND TRIP

This puzzle is a Jigsaw Sudoku. Complete the puzzle by filling in each square with a number 1 through 6 where no number repeats inside the irregular shape along with the classic each row and each column only having each number appear 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

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