

Spring 2023

Allegheny Mountain Section of the Mathematical
Association of America

Allegheny Mountain Section Newsletter



INSIDE THIS ISSUE

Letter from our Representative to the MAA Congress	2
Chair's Report	3
Seeking Nominations for Distinguished Teaching, Service and Mentor Awards	4
Candidate Biographies	5, 6
Invited Speaker's Talk Abstracts	7
Meeting Schedule of Events	8
Career Panelists Info, Section NExT Report	9
Section Colloquium Info	10
Found Math and Spring Puzzle	11

SPRING SECTION MEETING HOSTED BY PENNWEST EDINBORO

The Allegheny Mountain Section's Spring Meeting will be held on Friday March 31 and Saturday April 1, 2023 at PennWest Edinboro. We are extremely excited to be meeting in person again! Our three invited speakers are: **Deirdre Longacher Smeltzer** who is currently serving as the Senior Director for Programs at the MAA and is our Section Visitor this year, **David Richeson** from Dickinson College, and **Haydee Lindo** from Harvey Mudd College. You can find their talk titles and abstracts on page 7 in this newsletter.

There will be an Italian Trio dinner buffet Friday evening as well as a free pizza dinner for students. We're also holding a career panel for students Saturday morning. Information on our panelists can be found on page 9. Online registration will cost \$30 for MAA members and \$35 for non members. There will be a \$10 upcharge for registration in person at the meeting. Also no cash will be accepted at the registration table - check or credit card only. As always, students can attend for free. You can register for the meeting by clicking [here](#) no later than March 24, 2023. Your registration fee helps to support honorariums, Section NExT workshops, 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: Kim Roth



**Kim Roth of Juniata College,
Representative to the MAA
Congress**

"If you want to be involved in the work of the section, ask any officer about opportunities to serve the section or the association."

Hope to see you at the Spring Meeting at Edinboro! This will be my last meeting serving as your section representative to the association and I have enjoyed my term. I hope you have all had a good experience with MAA Connect and have joined the Allegheny Mountain page to keep up with section happenings.

There are several opportunities over the summer from the association. There is [MathFest](#) in Tampa Florida August 2-5. I enjoyed being in person at MathFest last summer and hope we will have an equally great experience in Tampa.

For those looking for an online experience. The Open Math online workshops have the following topics this summer:

- Active Learning in Differential Equations Inspired by Modeling
- Designing Professional Development Programs for Graduate Student Teaching Assistants
- Inclusive Active Learning in Mathematics
- Inclusion and Inquiry: Fostering Student Belonging and Ownership
- Redesigning Your Course for Mastery Grading

- Engaging Multivariable Calculus Students using CalcPlot3D and 3D-Printed Surfaces
 - Team-Based Inquiry Learning
- There will be more information available on these workshops on the MAA website soon.

[PIC Math](#) starts a new cohort over the summer. PIC Math is accepting applications from faculty interested in participating in PIC Math during the 2023-2024 academic year. PIC Math prepares students for industrial careers. Applications are due March 31st.

If your department is hiring this year, make sure your new faculty is aware of National Project NExT where applications are due April 15th, and Allegheny Mountain Section NExT.

I encourage you to take advantage of these opportunities and to get involved. If you want to be involved in the work of our section, ask any officer about opportunities to serve the section or the association.

Thank you for the opportunity to serve. Hope your semester is going well.



FROM THE CHAIR: Shelly Bouchat

Greetings and well wishes from Berea, KY. Our weather here has had its ups and downs, between unseasonably warm and the normal cold of winter. I am hopeful that in the next month or two, we will fully enter spring (regardless of what Punxsutawney Phil predicted) and consistently have warmer days. In particular, I hope we will have some beautiful weather for our meeting on March 31st and April 1st at PennWest Edinboro (formerly Edinboro University of Pennsylvania). I hope that many of you will be able to attend, and I look forward to seeing you all in person.

It has been four years since our Section has had an in-person spring meeting. Let me repeat that, it has been four years since we have shared our love of mathematics with each other in person! I am very excited that we will be able to meet once again to enjoy mathematics together. As the Section meeting approaches and we return to a semblance of normalcy, it is also a great time to point out just how wonderful and dedicated our Section members are. In both Spring 2021 and Spring 2022, our Section made the difficult decision to hold a virtual Section meeting. We know that it didn't have quite the same feel, but it was nice to see how many of you still chose to participate. I hope that as we return to in-person meetings that you will continue to be active in our Section's activities.

One of the great things about our Section, to me, is how many individuals we have that make such a profound impact to the teaching of mathematics, to mentoring students in research projects, and to ensuring that our Section operates smoothly. At our Section

meeting, we will honor three individuals who have gone above and beyond in these categories, and we couldn't honor these individuals without nominations. I would like to encourage each of you to nominate one of your colleagues for our Section's Teaching Award, Mentor Award, or Service Award. To nominate a colleague, all you have to do is send an email to that award committee's chair (found on page 4) telling them why that individual is deserving of the award.

Lastly, as many of you know, these are the last few months I will be serving as Chair of the Section. It was a great honor to be nominated to serve in this position, and at the time I accepted the position I was still at Indiana University of Pennsylvania. The one thing I have learned in life is that you just can't predict the future. I had the unexpected happen and faced one of the most difficult times in my life. It really meant a lot to have the support of all the friends that I have made in the Section to help me through a major life decision to leave my job as a full professor to start over at an institution that would be safer for me and better for my mental health and healing. I have appreciated the love and support from each and every one of you. I look forward to seeing you all in person at the Section meeting this spring, and I hope that we will all continue to stay in touch. My hope is that each of you can also see the benefits to your own lives from the connections and friendships that you have made through participation in the Allegheny Mountain Section.

I hope everyone has a wonderful semester, and I look forward to seeing you all in Edinboro.



Shelly Bouchat of Berea College, Section Chair

"My hope is that each of you can also see the benefits to your own lives from the connections and friendships that you have made through participation in the Allegheny Mountain Section."

SEEKING NOMINATIONS FOR AWARD RECIPIENTS

2023 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 10, 2023 to:

Kuei-Nuan Lin, Penn State Greater Allegheny
linkn@psu.edu



2023 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 10, 2023 to:

Kristen Pueschel, Penn State New Kensington
klp65@psu.edu

2023 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 10, 2023 to :

Kim Roth, Juniata College
roth@juniata.edu

SECTION EXECUTIVE COMMITTEE ELECTION

The section's Nominating Committee for 2023-24 consists of Dan Shifflet (chair), Derek Hanely, and Adam Blumenthal. Elections will be held during our section's Saturday morning MAA business meeting on April 1st. The Nominating Committee is pleased to present the following slate of candidates for the positions of Second Vice-Chair, Treasurer, Newsletter Editor and Coordinator of Student Programs.

Second Vice-Chair: Jared Burns, Henry Escudro

Treasurer: Tami Lakins

Newsletter Editor: Adam Roberts

Coordinator of Student Programs: Rich Ligo, Sam Fuller

CANDIDATE BIOGRAPHIES

Jared Burns, Seton Hill University, — Candidate for Second Vice Chair

Jared “Jay” Burns, Seton Hill University, is an Associate Professor in the Math Department, and Director of the Masters in Science for Information Technology Management. He teaches a variety of courses ranging from Calculus, Mathematical Analysis, Statistics, and Data Science for undergraduates and graduate students. Jay particularly enjoys working with his research students in a variety of areas such as Multiplicative Calculi, Numerical Analysis, and Data Science, and was previously honored as the 2019 recipient of the Allegheny Mountain Section Mentor Award. Prior to Seton Hill University, he received his Ph.D. from the University of Pittsburgh in Functional Analysis, where he also completed his undergrad in Applied Mathematics. Some of his current research interests include Measure Theory, various areas of Mathematics Education, and ancient Greek notions of wonder as a Resilience building tool. Jay has served on a few national committees for groups. He is excited for the opportunity to become more involved in our local section!

Henry Escudro, Juniata College — Candidate for Second Vice Chair

Henry Escudro is Professor and Chair of Mathematics at Juniata College. He obtained his undergraduate and master's degrees in mathematics from the Ateneo de Manila University in the Philippines. In 2001, Henry moved to Kalamazoo, Michigan to pursue further graduate studies at Western Michigan University. In 2006, he joined Juniata College after completing his PhD. His favorite course to teach is Foundations of Mathematics where most students are first initiated into the world of formal proofs.



CANDIDATE BIOGRAPHIES

Tami Lakins, Allegheny College — Candidate for Treasurer

Tami Lakins is Professor of Mathematics at Allegheny College in Meadville, PA. She currently serves as Treasurer of the Allegheny Mountain Section MAA; she has also served 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 the Allegheny Mountain Section NExT from 2000 to 2003, and from 2008 to 2012. Nationally, Tami is currently Editor-Elect of The College Mathematics Journal and an Associate Editor on the MAA Classroom Resources Editorial Board. She received the Allegheny Mountain Section Service Award in 2009.

Rich Ligo, Gannon University — Candidate for Coordinator of Student Programs

Rich Ligo is an assistant professor at Gannon University. He studied undergraduate mathematics at Westminster College before completing a Ph.D. in Differential Geometry at the University of Iowa in 2017. Rich is a fellow of the 2018 Project NExT cohort and has been an MAA member since 2016. He enjoys designing and authoring various course materials using LaTeX, WeBWork, Desmos, and GeoGebra to serve as replacements for traditional textbooks and problem sets. His work thus far includes course manuals and/or problem sets for Gannon's calculus sequence, linear algebra, differential equations, real analysis, and math for business.

Sam Fuller, Penn State University — Candidate for Coordinator of Student Programs

Sam Fuller is an Assistant Teaching Professor at Penn State. She started teaching at Penn State Altoona in fall 2016 and moved to the University Park campus last fall. She enjoys teaching a wide variety of calculus and lower-level math courses. She has been the primary instructor of a general education course, Math 35, that introduces students to varied topics such as set theory and graph theory. She has liked teaching Business Calculus in the past and is enjoying teaching a follow-up 2-credit course on multivariable calculus, primarily for agricultural students. Outside of mathematics, she was an advisor for New Student Orientation at Penn State Altoona for three years. She received her master's degree from the University of Minnesota and her bachelor's degree from Penn State, both in mathematics.

Adam Roberts, PennWest Clarion — Candidate for Newsletter Editor

Adam Roberts is a Professor of Mathematics at Pennsylvania Western (PennWest) University based at their Clarion campus. As an undergraduate student he attended the University of Akron where he was a member of the Ohio Section of the MAA. He completed his Ph.D. at Bowling State University in 2005 and later that year joined began as a mathematics professor at Clarion University. Since 2011 he has served as the department chair overseeing mathematics (the department itself has changed composition a few times since then). Adam is looking to get more involved with the Allegheny Mountain Section MAA and would welcome the opportunity to serve as Newsletter Editor.

INVITED SPEAKERS: TALK TITLES & ABSTRACTS

Deirdre Longacher Smeltzer

Senior Director for Programs at the MAA

Title: Invariants and Monovariants: Can I get there from here?

Abstract: Many games and puzzles consist of attempting to change a given configuration from one state to another using a prescribed set of permissible moves. Interesting mathematics arises from asking questions such as "Can Player 1 beat Player 2 in six moves?" and "Can a 10×10 square grid be tiled with 25 copies of a 1×4 tile?" The notions of invariants (that is, properties that remain fixed when moving from one permissible state to another) and monovariants (properties that change monotonically when moving from one permissible state to another) can often be utilized to provide a clever solution to such questions.



David Richeson

Title: A Romance of Many (and Fractional) Dimensions

Abstract: Dimension seems like an intuitive idea. We are all familiar with zero-dimensional points, one-dimensional curves, two-dimensional surfaces, and three-dimensional solids. Yet dimension is a slippery idea that took mathematicians many years to understand. We will use pictures, animations, and analogies to describe our three dimensions and help us visualize a fourth dimension. We will discuss the history of dimension, the public's infatuation with the fourth dimension, time as an extra dimension, the meaning of non-integer dimensions, and the unexpected properties of high-dimensional spaces.

Haydee Lindo

Title: Looking for the Center

Abstract: Do you know which matrices commute with all the others? Do you know a beautiful structural algebraic reason behind the answer? The well-known trace map on matrices can be generalized to a map on any module over a commutative ring. The image of such a map is called a trace ideal. I will speak on some recent developments in the theory of trace ideals with applications to our understanding about the relationship between modules, rings and ideals. Ultimately, this will help us understand the commutative centers of endomorphism rings.



SPRING SECTION MEETING SCHEDULE



ALLEGHENY MOUNTAIN SECTION MAA Annual Meeting, March 31 & April 1, 2023 PennWest Edinboro, Edinboro, PA

Schedule of Events

Friday March 31, 2023

2:30 – 3:30	Section Officer's Meeting
3:00 – 4:00	Registration
3:55 – 4:00	Welcome Remarks from PennWest Edinboro
4:00 – 5:00	Invited Address - David Richeson, Dickenson College "A Romance of Many (and Fractional) Dimensions"
5:15 – 6:30	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 1, 2023

7:30 – 8:45	Breakfast
8:00 – 8:45	Section Business Meeting
8:00 – 9:00	Registration
9:00 – 10:00	Invited Address - Haydee Lindo, Harvey Mudd College "Looking for the Center"
10:15 – 11:30	Faculty Talks
10:15 – 11:30	Career Panel for students
11:45 – 12:45	Invited Address - Deirdre Longacher Smeltzer, Senior Director for Programs at the MAA "Invariants and Monovariants: Can I get there from here?"
12:45 – 1:00	Closing Remarks

SPRING MEETING HOTEL INFORMATION

Rooms have been reserved at the Comfort Suites in Edinboro - phone (814) 969-7000. To receive the discounted rate, reservations must be made no later than March 10, 2023. Be sure to ask for the "MAA Conference" block.

CAREER PANELISTS AND THEIR JOBS

We are excited to have the following individuals speaking on our career panel. All students are encouraged to participate.

- Kelby Faulk, *Data and Analytic consultant*
- Sam Ligeros, *High school teacher*
- Carrie Brown, *Advanced Cyberinfrastructure Research and Education Facilitator*
- Katie Burket, *Housing Program Coordinator*

SECTION NExT REPORT

Kristen Pueschel, Penn State New Kensington and
John Tolle, Penn State DuBois

The spring Section NExT workshop will be held after the spring meeting on Saturday April 1st at PennWest Edinboro. Ahead of the workshop, from 1:00 - 2:00 pm, we will have lunch at the Van Houten dining hall. All faculty are welcome to join. The workshop will be from 2:00 – 3:30 pm in 139 Ross Hall.

Deirdre Smeltzer, Senior Director for Programs at the MAA, will lead a workshop on **Defining and Finding “Success”**. What does it take to pave a successful career path within academia? In this session, participants will examine institutional guidelines for achieving professional success, consider the ways that their personal priorities shape the meaning of “success,” and explore how to balance and align the two. Participants are asked to bring a copy of their department's promotion guidelines to the workshop. You can register for the workshop at https://pennstate.qualtrics.com/jfe/form/SV_81E5cM5lv4gYUgm to let us know that you will attend!

If you have colleagues that are new to the Section or new to full-time teaching, please consider encouraging them to sign up for the Section NExT mailing list by sending an email to Kristen Pueschel (klp65@psu.edu) or John Tolle (jut14@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>.

John Tolle will be retiring from his role as Section NExT co-coordinator at the end of this year and Kuei-Nuan Lin will be taking his place. Thanks to John for his years of service in organizing these events!

ALLEGHENY MOUNTAIN SECTION COLLOQUIUM SERIES

The Colloquium Committee (Tom Cuchta, Kristen Pueschel, and Tim Flowers) is pleased to report a great colloquium on 7 February 2023 by Dr. Sabrina Streipert of University of Pittsburgh who spoke about "Square Root Identities for Harvested Beverton–Holt Models". We are still in the planning phase for the two Fall 2023 colloquia.

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 Tom Cuchta at tcuchta@fairmontstate.edu. Stay tuned and check our Section webpage for more details (<https://www.alleghenymtn.maa.org/colloquium>).

If you would like to be part of our email list to receive infrequent emails about future Allegheny Mountain Colloquium events, then please sign up at this link: <https://forms.gle/jT1zNrxoEzcvZRA5A>

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, Tom Cuchta (tcuchta@fairmontstate.edu or <http://tomcuchta.com>).

FOUND MATH



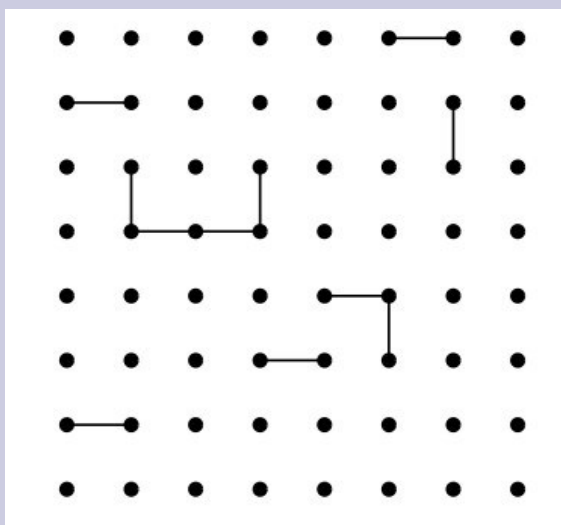
MAA Found Math Photo:

Photo by Derek Sturgill.
A tiling found in the entry to Lindley Hall at Ohio University.

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

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

SPRING PUZZLE ROUND TRIP



To complete the puzzle, connect the dots with lines (horizontal or vertical only) so that each dot is visited only one time and the lines form a single connected loop.

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

Hint: There is only one possibility for each dot located in the corners of the puzzle.

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

Retired from
Washington & Jefferson College

kjones@washjeff.edu