

Spring 2021

Allegheny Mountain Section of the Mathematical
Association of America

Allegheny Mountain Section Newsletter



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SPRING SECTION MEETING HOSTED BY EDINBORO UNIVERSITY

Due to the uncertainty of the pandemic, the Executive Committee decided to hold our Spring Section Meeting virtually via Zoom, April 9-10, 2021. We have three exciting guest speakers lined up — Tim Chartier from Davidson College, Tom Edgar from Pacific Lutheran University and Carol Schumacher from Kenyon College. You can find their talk titles and abstracts on page 8 in this Newsletter. Additionally, we will be holding a virtual student problem solving competition Friday evening prior to our student talks.

The registration fee for our Spring Zoom Meeting is a flat rate of \$10. Your registration fee helps us to support honorariums, Section NEXt workshops, and many other endeavors. As always, students can attend for free. You can register for the meeting by clicking <https://forms.gle/WVpxpP9uEjW1STJ9>. The Meeting Zoom links will be emailed separately after you register. You can find the schedule of events on page 9.

We urge all MAA members to attend our Section Business Meeting Saturday morning. It's a wonderful, fun, and easy way to contribute to our section.

NEW ALLEGHENY MOUNTAIN SECTION COLLOQUIUM SERIES

The Allegheny Mountain Section is excited to announce the start of a new colloquium series. Our first colloquium talk will be 15 March 2021 at 4:00PM-5:00PM. Dr. Kim Roth of Juniata College will be presenting a talk titled: *Seeing the forest for the trees: Random Forests and Predicting Fracking*. Please see the flyer on page 7. We are seeking future speakers for the colloquium series, so if you are interested in giving a talk or know of someone 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 (<http://sections.maa.org/allegheny/colloquium/>).

SECTION REPRESENTATIVE TO THE MAA CONGRESS:

Kim Roth



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

“... this is a great time to encourage your math majors and/or math club to attend the section meeting.”

Greetings! I hope your spring semester is benefiting from the fall practice at teaching in new modes and that you are staying healthy. I am due for my second covid-19 vaccine dose shortly and am grateful that I can receive the shot and hope it means that fall 2021 will be closer to a normal teaching semester.

The MAA Congress has not met since its summer meeting, so I have nothing new to report from the Congress.

I hope you can all join me in attending the virtual Allegheny Mountain Section Meeting on April 9th and 10th. Since there is no travel and no registration fee for students

this is a great time to encourage your math majors and/or math club to attend the section meeting. You could even set up a back channel discussion on a technology tool like discord to have your students have a virtual watch party of talks.

MathFest in 2021 is August 4th through the 7th and is currently planned as a hybrid meeting with full virtual attendance possible and some planned in person options in Sacramento, CA. Final decisions will be announced on the [MathFest website](#) about the in-person portion at a later date. I will be attending virtually and hope to “see” some of you there as well.

Hope spring semester goes well!

UPCOMING MEETING — MATHFEST

Sacramento, CA August 4-7, 2021

Invited Address Speakers



Candice Price
University of San Diego



Steven Butler
Iowa State University



Erica Flapan
Pomona College

FROM THE CHAIR: Craig Dodge

Greetings from the cold and snowy Meadville PA. I hope you all are staying safe and warm as we ramp up into this Spring semester. I find myself writing in a reasonably optimistic mood, which has been a rare case for the past year. While the uncertainty of the pandemic still looms, experience gained seems to make it less imposing. Moreover, the rollout of vaccinations inspires a hope we have not had for some time. I look forward to reclaiming some sense of normalcy we remember from before 2020.

In the spirit of adaptation, we are excited for our first remote Spring Section Meeting April 9-10 this year. I wish to give a special thanks to our hosts at Edinboro who have been incredibly helpful in planning this meeting. While we will all be missing the opportunity to gather in person, we are hoping that the remote meeting will offer increased accessibility. Please advertise the meeting to your colleagues and students so that as many people as possible can enjoy the fantastic group of speakers that has been lined up. As you are planning for the Spring Meeting, if you would like to contribute a talk, please keep in mind abstracts are due Thursday April 1. Additional details can be found on the section website.

In addition to the Spring Meeting the section hopes to roll out new initiatives to reach out to our members. While the shift to online interaction was challenging over the past year, it has given all of us an opportunity to connect more regularly even over our geographically expansive section. Our section has a great deal of talent and experience which we would like to showcase. In the coming months we will be introducing our Allegheny Mountain Section Colloquium with the intention of giving local speakers an audience to present remotely. Please keep your eyes open for future announcements, and if you have any interest in participating reach out to the section.

Finally I would like to end my final letter as chair of the section with a heartfelt thank you, to all of the section and especially my section officers without whom I would have been lost. Taking over as chair last summer came as a great surprise to me, but it has turned out to be a fantastic opportunity to work with some incredible mathematicians in the area. I look forward to working with all of you in the future and seeing the great work I know will be coming from the section.



Craig Dodge of Allegheny College, Section Chair

“Our section has a great deal of talent and experience which we would like to showcase.”



SEEKING NOMINATIONS FOR AWARD RECIPIENTS

2020 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 5, 2021 to:

J. Lyn Miller, Slippery Rock University

lyn.miller@sru.edu



2020 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 5, 2021 to:

Duane Farnsworth, Clarion University
dfarnsworth@clarion.edu

2020 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 5, 2021 to :

Rachael Miller, Duquesne University
millerneilanr@duq.edu

SECTION NExT REPORT

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

Our Fall 2020 Section NExT meeting, the first ever conducted entirely by Zoom, took place Saturday, September 19. Dr. Carolyn Cuff of Juniata College gave a workshop on resampling activities that could be used in introductory statistics classes. The afternoon featured a panel on active learning in remote classrooms. The panelists were Rena Levitt from Minerva, Virgil Pierce from the University of Northern Colorado, Stanley Smith and Kuei-Nuan Lin, both from Penn State. Panelists discussed the importance of interaction with students, being authentic and engaged with the students, to build trust and community. The panel also discussed different technologies related to online teaching and ways of handling access issues.

As the Section Meeting takes place April 9-10 by Zoom, to prevent Zoom fatigue, we plan to

have the Spring 2021 Section NExT meeting remotely on a Saturday other than April 10. This meeting will involve a workshop and a discussion time. Speaker and topic are yet to be determined.

In the meantime, we have begun an informal Thursday afternoon Section NExT Happy Hour by Zoom, to discuss current challenges in teaching and share solutions. Our first Happy Hour took place 4:30-5:30 ET on February 25. Participants shared current experiences and enjoyed an impromptu discussion of mastery-based grading.

Senior faculty are always welcome to join us for our events, and we encourage senior faculty to inform junior faculty in their department of the opportunities provided by Section NExT.

SECTION EXECUTIVE COMMITTEE ELECTION

The section's Nominating Committee for 2020-21 consists of Tim Flowers (chair), Anne Quinn, and Tom Cuchta. Elections will be conducted online this year. MAA members in the section will receive their ballot via email approximately 10 days before the spring section meeting. Voting will close after the meeting. Reminders will be posted on MAA Connect and the results will be announced there as well. The Nominating Committee is pleased to present the following slate of candidates.

Second Vice-Chair

Kuei-Nuan Lin

Secretary

Kimberly Burch

Coordinator of Student Programs

Dan Shifflet

Newsletter Editor

Kim Jones



CANDIDATE BIOGRAPHIES

Kuei-Nuan Lin, Penn State Greater Allegheny — Candidate for Second Vice Chair

Kuei-Nuan Lin is an associate professor at Penn State Greater Allegheny, where she has been since 2014. She graduated from Purdue University in 2010 and was a visiting professor at the University of California, Riverside, and Smith College before arriving in the Pittsburgh area. Her teaching interests include interactive technology usages in STEM teaching, equity teaching and learning, and workshops for in-service teachers. Additionally, she wrote an interactive online linear algebra textbook. At Penn State Greater Allegheny, Dr. Lin has been working with talented first and second-year undergraduate students on independent research. She attended a couple of Section NExT meetings and was on the panel twice. In addition, she has served as a judge on various award committees. At Purdue, she organized the graduate student algebra seminar and several special sections in AMS sectional meetings. She also served as the primary TA in the MSRI summer graduate workshops and was in charge of scheduling and student working groups. Dr. Lin's research focuses on commutative algebra and its connection to algebraic geometry and combinatorics.

Kimberly Burch, Indiana University of Pennsylvania — Candidate for Secretary

Kimberly Burch received her Ph.D. in graph theory in 2002 from the University of Pittsburgh. She is an Associate Professor of mathematics at Indiana University of Pennsylvania where she enjoys doing research with students whenever possible. Her research interests include chemical graph theory, the effectiveness of online homework systems, using automated response systems for real time classroom assessment, and using graph theory in recreational mathematics. Dr. Burch has served as the Secretary of the Allegheny Mountain Section of the MAA since 2012 and has been an active member of the section since 2005.

Dan Shifflet, Penn State DuBois — Candidate for Chair-Elect

Dan Shifflet is a Professor at Clarion University of Pennsylvania. He has been an active volunteer in the Allegheny Mountain Section and attended every spring meeting since joining in 2011. For the past three years he has been the Coordinator of Student Programs and would happily do it for two more years! Dan also enjoys working with the Math Club at Clarion, telling corny jokes in class, and practicing inquiry-based learning in upper-level classes. He received his Ph.D. from Bowling Green State University in non-commutative algebra.

Kim Jones, Washington & Jefferson College — Candidate for Newsletter Editor

Kim Jones is a Senior Instructor at Washington and Jefferson College. She earned a B.A. in Mathematics as well as Anthropology from The Pennsylvania State University, and an M.S. in Mathematics from Virginia Commonwealth University. She joined the mathematics department at W&J in the fall of 2005. In addition to teaching, she serves as W&J's math placement coordinator. Kim has served as the Newsletter Editor for the Allegheny Mountain Section for the past four years.



Allegheny Mountain



Colloquium



Speaker: Dr. Kim Roth (Juniata College)

Date: 15 March 2021, 4:00PM–5:00PM

Zoom link: <https://bit.ly/3ugwPfy>

Title: Seeing the forest for the trees: Random Forests and Predicting Fracking

Abstract: When you have thousands of variables that you can select from to describe and predict whether active fracking is occurring, how do you choose? Random forests are a learning method that uses an ensemble of decision trees to build a predictive model. We'll discuss how to make a random forest and how we used one to tell what measures from the microbiome and the sample site best predicted active fracking status.



Speaker's webpage: <https://karoth.github.io/>

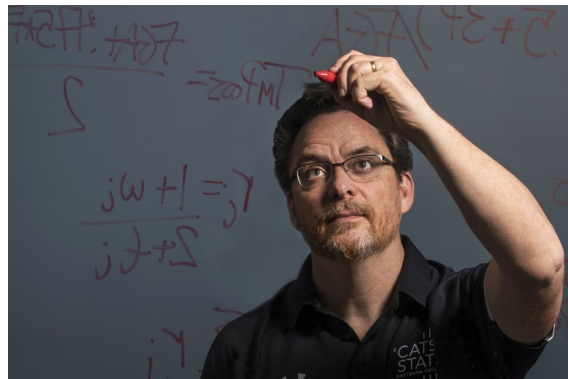
<http://sections.maa.org/allegheny/colloquium/>

INVITED SPEAKERS: TALK TITLES & ABSTRACTS

Tim Chartier

Title: Mathematical Celebrity Look-Alikes

Abstract: Have you ever wondered what celebrities you look like? This talk develops a mathematical answer to this question from a group of celebrity photos. Vectors norms enable us to discern what celebrity looks most like a selected individual. Then, we broaden the question to explore what linear combination of celebrity photos best approximates a selected photo. Would you describe yourself as a cross between Russell Crowe and Ben Stiller? Or maybe Julia Roberts and Jennifer Aniston? In this talk, we learn how to answer this question using mathematical methods from undergraduate linear algebra classes.



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: A Mathematician's Groundhog Day: Prove, reflect, and repeat

Abstract: What might a mathematician do if they were forced to relive the same day over and over, much like Bill Murray in the classic movie Groundhog Day? Wouldn't boredom set in after proving the same theorem over and over? Not if they use different techniques each time! In this talk, we will discuss why mathematicians might be interested in proving one result in many ways. We'll explore multiple proofs for a variety of theorems that are typically encountered by undergraduate mathematics students. In particular, we will encounter several visually-inspired proofs that encourage alternate ways of thinking about pure mathematical ideas.

VIRTUAL SPRING MEETING SCHEDULE



ALLEGHENY MOUNTAIN SECTION, MAA
Annual meeting, April 9 & 10, 2021

Schedule of Events

Friday, April 9, 2021

2:30 – 3:30	Section Officer's Meeting
3:55 – 4:00	Welcome from Edinboro University
4:00 – 5:00	Invited Address Tim Chartier, Davidson College <i>Mathematical Celebrity Look-Alikes</i>
5:00 – 5:15	Awards
5:15 – 6:00	Student Problem Solving Competition
7:00 – 8:00	Student Talks

Saturday, April 10, 2021

8:00 – 8:45	Section Business Meeting
9:00 – 10:00	Invited Address Carol Schumacher, Kenyon College <i>All Tangled Up</i>
10:15 – 11:30	Faculty Talks
11:45 – 12:45	Invited Address Tom Edgar, Pacific Lutheran University <i>A Mathematician's Groundhog Day: Prove, reflect, and repeat</i>
12:45 - 12:50	Closing Remarks

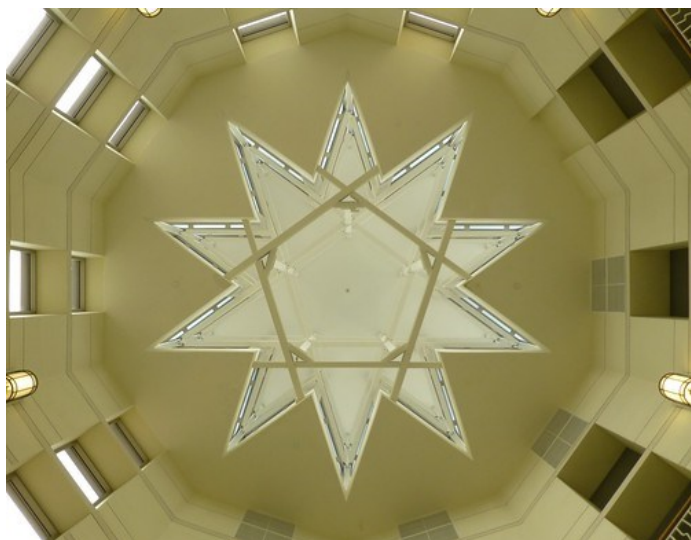


ALLEGHENY MOUNTAIN SECTION SOCIAL MEDIA ACCOUNTS

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 Stuart Moskowitz of Humboldt State University.

A stellated decagonal prism seen at the top of the Fort Worth Convention Center.

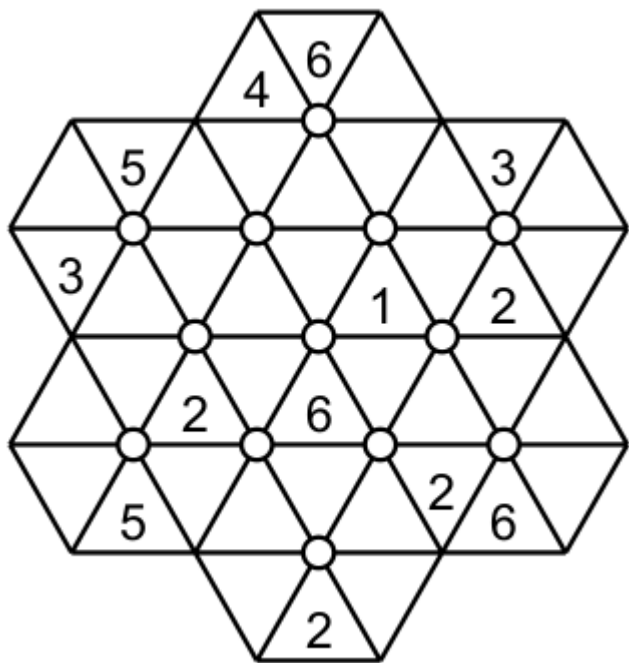
Found Math is a photo gallery of mathematical images on the MAA website.

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

SPRING PUZZLE SNOWFLAKE SUDOKU

Fill each hexagon with the numbers 1 through 6 so that no number repeats in any given hexagon.

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

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