Fall 2024 Meeting
of MAA-NJ

Monmouth University

Saturday, November 9, 2024

Schedule

All of the events take place in Pozycki Hall

[Campus MAP](#)

8:30 – 9:30	**Registration and Coffee.** Lobby
9:00 – 1:30	**[Book Exhibits.](#)** Lobby
9:30 – 9:40	**Welcome.** *Dr. Susan Gupta, Vice-Provost*. Room 115
9:40 – 10:30	**[Every Paper Tells a Story: Reflections on the Monthly.](#)** *Della Dumbaugh*. Room 115
10:30 – 10:45	**MAA-NJ Business Meeting.** Room 115
10:45 – 11:10	**Refreshments.** Lobby
11:10 – 12:00	**[Math Circle Magic for All.](#)** *Lauren Keough*. Room 115
12:00 – 1:00	**Lunch.** upstairs in Pozycki Hall [Lunch Discussion Tables.](#)

1:00 – 2:30	**General Contributed Papers:**
	○ **Session 1.** Room 204
	○ **Session 2.** Room 205
	○ **Session 3.** Room 206
2:30 – 3:00	**Intermission and Refreshments.** Lobby (Silent auction bidding ends at 3:00)
3:00 – 3:50	**Padovan, Pascal, and Proofs without Words.** *David Nacin*. Room 115
3:50 – 4:30	**Prizes and Awards.** Door prizes and silent auction winners (must be present to win). Room 115
5:00	**Dinner Honoring Speakers.** McLoone's Pier House, 1 Ocean Avenue, Long Branch, NJ

Code of Conduct

Additional program content

- [Sr. Stephanie Sloyan Award for Distinguished Service](#)
- [Report](#) on the 2024 MathFest MAA Congress Meeting
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Every Paper Tells a Story: Reflections on the *Monthly*

Della Dumbaugh

University of Richmond

Over its 131-year history, the *American Mathematical Monthly* has not only featured a wide array of mathematics on its pages but also a host of other insights related to the discipline. From Nobel prize winning ideas to careers inspired by a local drugstore to mathematical menus created by students, this talk showcases the riches of the *Monthly* and what we can learn about the profession. This talk also includes tips for publishing in the journal today.

Della Dumbaugh is the Robert Edwin Gains Professor of Mathematics at the University of Richmond and Editor of the *American Mathematical Monthly*. She feels at home in a mathematics classroom where her teaching has been celebrated by the University of Richmond, the State Council of Higher Education of

Virginia, and the Mathematical Association of America. Along with her friend and collaborator, Deanna Haunsperger, she recently published *Count Me In: Community and Belonging in Mathematics*. She enjoys writing letters the old fashioned way, exercising, and spending time with her family.

Math Circle Magic for All

Lauren Keough

Grand Valley State University

One of my favorite ways to interact with people is through doing problems that people don't always think of as "math". I've led math circles at GVSU for several years and will present some of my favorite problems. Some of these are magic tricks, and some are just magical in the cool math one discovers while exploring them. This will be an interactive talk where audience members get to discuss math-ish problems with each other and will (hopefully) get to leave with a new discovery of their own.

Lauren Keough is an associate professor in the Department of Mathematics at Grand Valley State University. Her favorite activities as a child in Rhode Island were those that allowed room for creativity, so, at first, she wasn't a huge math fan. In fact, when she used

her creativity to find patterns to do timed multiplication tests, she thought she was cheating. Her love for math started to develop as an undergraduate at Hofstra University where she learned she could be creative in her math courses. Lauren completed her PhD in 2015 at the University of Nebraska – Lincoln under the supervision of Dr. Jamie Radcliffe. Her PhD research is in extremal graph theory, and she especially loves areas where she can involve undergraduates. After graduate school, Lauren spent a year at Davidson College as a visiting assistant professor before moving to Grand Valley State University (GVSU) in 2016. At GVSU, Lauren strives to meet the needs of all undergraduates. She spreads her love of math by mentoring undergraduate research, hosting math circles, and teaching as many different courses as possible. Beyond math, Lauren likes to do crossword puzzles and is learning to embrace winter sports.

# Padovan, Pascal, and Proofs without Words

David Nacin

William Paterson University

What happens when we attempt to construct the Fibonacci spiral using triangles instead of squares? We get a new sequence: the Padovan sequence, which answers its own set of unique and beautiful counting problems. In this talk, we will demonstrate how this construction defines the sequence and then rediscover it in other, possibly surprising, places. We will also prove several identities without using words or numbers by considering triangles composed of colored dots.

The Fibonacci sequence is connected to the golden ratio, which arises from a simple question about rectangles and proportion. A slightly different, natural question leads to a new ratio and another method for defining our sequence. We will then explore the uses of this sequence and its ratio in architecture and discuss the history behind the patterns we have uncovered. We conclude with a counterexample to a

conjecture about this sequence, which leads us to a final construction involving copies of the Fibonacci sequence itself.

David Nacin is a professor of mathematics at William Paterson University, where he also serves as director of their graduate program in Applied Mathematics. He received his Ph.D. from Rutgers University in 2005 under the guidance of Dr. Robert Wilson. His research interests include non-commutative algebra, discrete mathematics, and recreational mathematics.
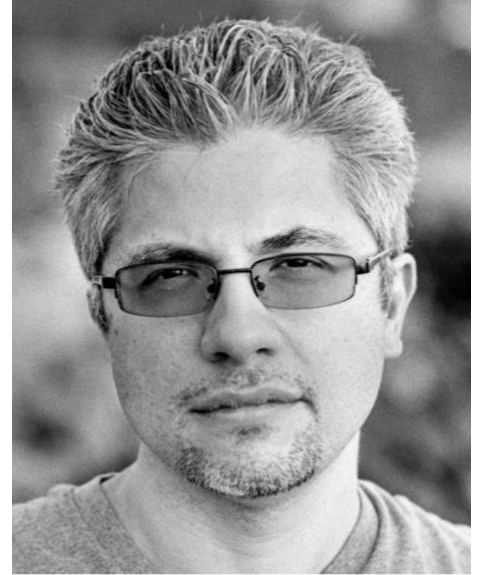
A Python enthusiast, David employs coding extensively for research, teaching, and personal enjoyment. He also enjoys cooking, hiking, and many varieties of games.

David enjoys designing and studying puzzles related to partition identities, the motion of chess pieces, finite groups, and other mathematical structures. Author of the book Math-Infused Sudoku, published by the

American Mathematical Society in 2019, his mathematical puzzles have appeared in many magazines and academic journals. His second book, The Group Theory Puzzle Book, is being released by Springer this Fall. Since the year 2016 he has maintained a puzzle blog at quadratablog.blogspot.com.

Contributed Paper Sessions

Organizer: Kathy Turrisi, Centenary University

Session 1:

Room 204

1:00–1:20: Sums of Fibonacci Numbers via Fibonacci Matrices.
Dirck Uptegrove, Nokia (retired)

1:25–1:45: Students' Ethical and Critical Thinking when Using ChatGPT in Problem Solving.
Erell Germia, Kean University

1:50–2:10: Let's ChatGPT about AI: Enhancing Faculty Experiences.
Amanda Beecher, Ramapo College of New Jersey

Abstracts are on the next page.

Session 1: Room 204

1:00–1:20: **Sums of Fibonacci Numbers via Fibonacci Matrices.**

Dirck Uptegrove, Nokia (retired)

Abstract: Motivated by the observation that if one selects any ten consecutive terms anywhere in the Fibonacci sequence and divides the sum by 11, the quotient will always be the 7th term of the sum I investigate to what extent this may be generalized. In the process, I illustrate the use of Fibonacci matrices to derive the results.

1:25–1:45: **Students' Ethical and Critical Thinking when Using ChatGPT in Problem Solving.**

Erell Germia, Kean University

Abstract: There is a pressing need to recognize that AI can be helpful in mathematics learning. The NCTM (2023) suggests that incorporating AI in mathematics teaching and learning is not limited to generating correct answers but more extensively by posing

questions that intentionally offer opportunities for students' conceptual understanding and developing mathematical reasoning. As higher education institutions continue to develop their policies on academic integrity with AI expectations, it might also be helpful to understand how students perceive responsible ways of using AI to uphold academic integrity. This paper will discuss the role of AI in undergraduate mathematics learning and its potential in fostering ethical and critical thinking while upholding academic integrity. Students illustrate different forms of ethical thinking when given hypothetical situations of ethical and unethical use of ChatGPT in solving problems and critical thinking emerges when students suggest ways to turn unethical practices of using ChatGPT into ethical ones. Discussions around this topic may offer valuable insights into reframing the design and implementation of mathematics instructions involving AI and the design of proper support for mathematics teachers in integrating AI into their instructions.

1:50–2:10: **Let's ChatGPT about AI: Enhancing Faculty Experiences*.**

Amanda Beecher, Ramapo College of New Jersey

Abstract: Everyone is talking about AI, so let's talk about it too! In this talk, I will share my experiences utilizing AI—let's call it my personal "GPT-3" for growth, productivity, and teaching—across various aspects of my role as a faculty member. From exploring research topics to streamlining grading processes and improving my writing, AI has proven to be a versatile tool that can enrich our professional practices.

This presentation aims to foster an open dialogue about the practical applications of AI in higher education. I invite fellow faculty members to join me in a discussion, sharing experiences and brainstorming innovative ways to leverage AI for our collective benefit. As we navigate this rapidly evolving landscape, let's explore how we can harness AI to improve our lives as educators and enhance the learning experience for our students.

*ChatGPT helped me write this, because who has time to write two paragraphs!

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Contributed Paper Sessions
Organizer: Kathy Turrisi, Centenary University

Session 2:
Room 205

1:00–1:20: Student Reading of Mathematics Before Class.
Sandra Zak, Monmouth University

1:25–1:45: Alternative Grading - An Introduction and Implementation.
Matt Charnley, Rutger's University

1:50–2:10: Increasing Student Enrollment in Mathematics Programs.
Katarzyna Kowal, Ramapo College of New Jersey

2:15–2:35: Building Bridges in Mathematical Reasoning.
Ron Foley, Middlesex College

Abstracts are on the next page.

Session 2: Room 205

1:00–1:20: **Student Reading of Mathematics Before Class.**

Sandra Zak, Monmouth University

Abstract: In the upper division proof courses, we strive to give the students more than just a definition, statement of a theorem, or a correct proof. There is a desire to help the student see what might have generated the idea for the definition, how the statement of the theorem may have arisen, and then an understanding of what techniques are being used in the proof. Students approaching the ideas for the first time may struggle to make sense of them, and thus may not gain the deeper understanding we seek. One way to help them is to have them read their materials before class. However, reading a mathematics text is daunting for students especially if they have had no experience. The first approach was through a set of questions, referred to as "Pre-Class Reading" that asked specific questions about the material to be discussed at the next class. This has

evolved into structured reading notes that ask students more specific and detailed questions about what they are reading and provide a way to discuss the central ideas during class. We will look at examples, and consider some of the questions about grading these assignments.

1:25–1:45: **Alternative Grading - An Introduction and Implementation.**

Matt Charnley, Rutger's University

Abstract: There has been a general movement around the country in math and other disciplines to think more about how we assign course grades to students and look into ways that more directly reflect understanding instead of ranking students. In this talk, I'll discuss some of the history of grading and some of the newer developments since then. I will also discuss some thoughts on how to implement this in a variety of different classroom environments.

1:50–2:10: **Increasing Student Enrollment in Mathematics Programs.**

Katarzyna Kowal, Ramapo College of New Jersey

Abstract: The author will present numerous successful methods that she designed to increase student enrollment in the Mathematics Program at Ramapo College of New Jersey and beyond. The author designed these methods as a member of the mathematics department, as a former department chair, and as an advisor of student organizations. Some examples include ways of working with alumni, and community building activities, just to name a few. The author will also share her experiences of building math programs retention among the undergraduate students from her years of being a director of the New Jersey Undergraduate Mathematics Competition.

2:15–2:35: Building Bridges in Mathematical Reasoning.

Ron Foley, Middlesex College

Abstract: In this talk, I discuss the development of combinatorial reasoning in a group of four 11th-grade students through an in-depth analysis of a problem-solving session involving problems in combinatorics we called the Pizza Problem* and the Towers Problem**. The students explore and connect concepts related to combinatorics, Pascal's Triangle, and isomorphic relationships among different problem contexts. Key findings reveal the non-linear nature of students' learning, the importance of multiple representations in developing structural understanding, and the critical role of collaborative discourse in mathematical sense-making.

*The Pizza Problem (general form): How many pizzas is it possible to make when you have n choices to choose from?

**The Towers Problem (general form): How many n-tall towers is it possible to build when you have two colors of Unifix cubes to choose from?

Contributed Paper Sessions

Organizer: Kathy Turrisi, Centenary University

Session 3:
Room 206

1:00–1:20: **Using Linear Algebra to Answer a Question About Nonlinear Mappings on Metric Spaces.**
Willow Denker, Binghamton University

1:25–1:45: **An Image Processing Tour of College Math.**
Yevgeniy Galperin, East Stroudsburg University of PA

Abstracts are on the next page.

Session 3: Room 206

1:00–1:20: **Using Linear Algebra to Answer a Question About Nonlinear Mappings on Metric Spaces.**

Willow Denker, Binghamton University

Abstract: We say a mapping on a metric space is a mean isometry if it satisfies an isometric condition involving weighted averages. It has already been shown that mean nonexpansive mappings are mean isometries if and only if they are isometries in the usual sense. In this talk, we will discuss extending this theorem to mappings which are mean isometric of multi-index length 3, but for which some of the weights in the average could be negative. In particular, we determine restrictions on the weights to guarantee that the function T is isometric in the usual sense. The problem involves analyzing a difference equation related to the mean isometric mapping, and only knowledge of linear algebra is required to follow along.

1:25–1:45: An Image Processing Tour of College Math.

Yevgeniy Galperin, East Stroudsburg University of PA

Abstract: We discuss the use of basic and advanced digital image processing methods to provide meaningful context for reviewing key topics of the college mathematics curriculum, to help students gain confidence in using concepts and techniques of applied mathematics, to increase student awareness of recent developments in mathematical sciences, and to help students prepare for graduate studies.

Lunch Discussion Tables
Organizer: Kathy Turrisi, Centenary University

1. **Increasing Student Enrollment in Mathematics Programs,** led by Katarzyna Kowal, Ramapo College of New Jersey
2. **Math Circles,** led by Lauren Keough, Grand Valley State University
3. **AI,** led by Amanda Beecher, Ramapo College of New Jersey
4. **Ideas for Advancing Students and Colleagues in Mathematics,** Della Dumbaugh, University of Richmond
5. **Puzzles!,** David Nacin, William Paterson University

We look forward to a set of lively and interesting discussions!

Dinner Honoring the Invited Speakers

Following the meeting, we will honor the invited speakers at dinner at [McLoone's Pier House](), 1 Ocean Avenue, Long Branch, NJ. Everyone is cordially invited.

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Book Sales at the Meeting

The AMS now handles MAA book sales. There will be display books at the meeting, and there will be discounted prices, but you will not be able to buy books from AMS at the meeting. You can order them by calling (800) 321-4267 or via the website: bookstore.ams.org. A coupon code to get 25% off will be provided at the meeting which is valid through December 31, 2024.

Acknowledgments

Future Meetings

MAA-NJ. The Spring 2025 MAA-NJ Section meeting will be held at Rowan College at Burlington County joint with MATYCNJ.

GSUMC. The 2025 Garden State Undergraduate Mathematics Conference will be held in conjunction with the Spring Meeting of the NJ Section at Rowan College at Burlington County.

MathFest. The 2025 MathFest will be in Sacramento CA, August 6-9, 2025.

Call for Contributed Papers, Topics for Special Sessions, and Lunch Table Discussion Topics for the Spring 2025 MAA-NJ Meeting

We are seeking abstracts for review for the General Contributed Paper Sessions. MAA Contributed Papers may focus on any aspect of mathematics. Examples include expository mathematics, connections within mathematics or between mathematics and other disciplines, the undergraduate mathematics curriculum, diversity, equity, inclusion in mathematics, social justice in the classroom, teaching, data analysis, or mathematical pedagogy. The CPS committee seeks and encourages proposals that will contribute toward a well-balanced and scholarly program that represents the MAA's mission. Please send the title and abstract to Kathy Turrisi, Executive Board Member and Chair of the CPS Committee, at: Kathy.Turrisi@centenaryuniversity.edu.

MAA members interested in proposing a Topic for a Special Session or are interested in leading a Lunch Table Discussion should submit their proposals to Kathy Turrisi at Kathy.Turrisi@centenaryuniversity.edu.

2024 Sr. Stephanie Sloyan Award for Distinguished Service

Dr. Amanda Beecher

The recipient of the 2024 Sr. Stephanie Sloyan Award for Distinguished Service to the New Jersey Section of the Mathematical Association of America is Dr. Amanda Beecher, Professor of Mathematics from Ramapo College of New Jersey.

Amanda has served the section for over a decade from volunteer positions all the way to Chair of the section. Her contributions began with volunteer work organizing the student talks sessions and student poster session at the Garden State Undergraduate Mathematics Conference. She was first elected to the Executive Board in 2016 and served as the Vice Chair for Speakers (2016-20), Chair-Elect (2020-2021), Chair, (2021-23), and finally Past-Chair (2023-24). Throughout this time, she participated, and often chaired, several standing and ad hoc committees.

At the association level, Amanda has served on the Curriculum Renewal Across the First Two Years (CRAFTY) committee, and is currently committee chair. She was also Vice-Chair of the Environmental Mathematics Special Interest Group of the MAA (SIGMAA-EM). She has advanced the MAA's program nationally through regular service as a contributed paper session organizer at numerous national meetings such as MathFest and the Joint Mathematics Meetings.

The New Jersey Section is thankful for her contributions to the section and the MAA in general, and is proud to award this year's Sr. Stephanie Sloyan Award for Distinguished Service to Dr. Amanda Beecher.

Response from Dr. Beecher

I am truly elated to be recognized for my service to the MAA-NJ Section. Working with these fabulous e-board members makes it all the more enjoyable and frankly, why else would I do it? I love doing mathematics and offering my time to collaborate with

other math professionals, planning conferences like this one, and tackling the challenges we face. This has been a true joy. I highly encourage others to get involved.

Our meetings provide a fantastic opportunity to connect with NJ math colleagues, learn about the challenges and victories in mathematics, and stay informed about the latest trends in higher education. I bring so many great ideas back to my own department at Ramapo College. This type of networking has been invaluable for my own career.

As I looked over the names of previous winners, I feel humbled to be in their company. Many of them are the leaders who welcomed me into the MAA-NJ community. They supported my growth, encouraged me to take on leadership roles, and most importantly, helped me succeed in those roles. I am incredibly thankful that this organization has turned so many into dear friends.

Above all, I am grateful for my family's support. My husband, Dan, knows that I am away for one weekend each semester for my NJ math conference,

and he adjusts his own schedule to care for our two sons, William and Samuel. I appreciate my family for allowing me to engage in these rewarding math endeavors.

Thank you once again for this incredible honor!

Report on the 2024 MathFest MAA Congress Meeting

Respectfully submitted by Paul von Dohlen, William Paterson University

The MAA Congress met on August 7, 2024 from 8:30am until 4pm, in Indianapolis, IN as part of MathFest 2024. The meeting began with a welcome and opening remarks by Victor Piercey, the MAA Congress Chair. He indicated that the general theme for this meeting was to explore how the Congress could do what it does better.

Hortensia Solo, MAA President, then gave a presidential update on the MAA. One point she made was to note the success of the US team at the International Math Olympiad; the team won first place with two team members placing in the top five individually. Dr. Solo also reported the MAA had renewed its publishing agreement with Taylor & Francis and announced the launch of the new *Scatterplots* journal. As another point of note, she mentioned the launch of the redesigned MAA website.

Following that, Michael Pearson, the MAA Executive Director, spoke primarily about the progress of the strategic plan initiatives. The four priorities had been identified as community, leadership and talent development, membership, and resource allocation and revenue streams. Dr. Pearson provided updates on each of these initiatives and noted that it is necessary to prioritize even within these priorities as they require considerable time and effort.

Audrey Malagon, Senior Director for Programs, reported on MAA programs. She noted that 43 outreach programs were funded this past year through support from MAA donors. Dr. Malagon emphasized the MAA's efforts in providing virtual programming (such as OPEN Math) and highlighted NSF-funded activities (including the National Research Experiences for Undergraduates Program (NREUP) and an undergraduate-led online conference, OURFA2M2).

A significant portion of the remaining meeting time was dedicated to MAA Congress bylaws revisions necessitated by the recent revisions to the MAA bylaws. Topics of consideration included what

congress members should be on the MAA Board of Directors, the nomination procedure for Congress Chair, and how at-large members of the Congress are recruited. MAA Congress Chair Victor Piercy concluded the meeting with closing remarks.

Social Media Information

Check us out!

Email:	maanj.socialmedia@gmail.com
Facebook:	www.facebook.com/maanewjersey
Instagram:	instagram.com/maanewjersey
Twitter:	twitter.com/maanewjersey

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MAA-NJ Committees

Awards Committee: Tuan Le, Camden County College; Aihua Li, Montclair State University; David Nacin, William Paterson University; Elizabeth Uptegrove, Felician University; Jonathan Weisbrod (ex-officio and chair), Rowan College at Burlington County.

Nominating Committee: Amanda Beecher, Ramapo College; Karen Clark (chair), The College of New Jersey; Jonathan Weisbrod (ex-offcio), Rowan College at Burlington County; Chung Wong, County College of Morris.

Teaching Award Committee: Amanda Beecher (chair), Ramapo College; Grace Cook, Bloomfield College of Montclair State University; Aihua Li, Montclair State University; Susan Marshall, Monmouth University; Paul von Dohlen, William Paterson University; Jonathan Weisbrod (ex-officio), Rowan College at Burlington County.

Contributed Paper Committee: Grace Cook, Bloomfield College of Montclair State University; Kathy Turrisi (chair), Centenary University.

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MAA-NJ Section Officers

Chair	Jonathan Weisbrod, Rowan College at Burlington County
Past-Chair	Amanda Beecher, Ramapo College
Secretary	Elizabeth Uptegrove, Felician University (emeritus)
Treasurer	Dirck Uptegrove
Vice-Chair for Fall Meetings	Sheila Tabanli, Rutgers University
Vice-Chair for Spring Meetings	Dawn Nelson, Saint Peter's University
Vice-Chair for Speakers	Deepak Bal, Montclair State University
Vice-Chair for Student Activities	Lee Collins, Atlantic Cape Community College
Vice-Chair for Two-Year Colleges	Tuan Le, Camden County College
GSUMC Co-Directors	Lee Collins, Atlantic Cape Community College; Joseph Coyle, Monmouth University
Book Sale Coordinators	Dirck Uptegrove; Elizabeth Uptegrove, Felician University (emeritus)
Door Prize Coordinator	Rasha Abadir, Rutgers University
Contributed Paper and Lunch Table Organizer	Kathy Turrisi, Centenary University
Liaison Coordinator	Ik Jae Lee, Rowan University
Program Editor	Dawn Nelson, Saint Peter's University
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Social Media Director	Grace Cook, Bloomfield College of Montclair State University
Web Administrator	Dirck Uptegrove
MAA-NJ Congress Representative	Paul von Dohlen, William Paterson University

Join the MAA!