Fall 2023 Newsletter

Fall Section Meeting at Stevenson University

The Fall 2023 Meeting of the MD-DC-VA section of the MAA will be held at Stevenson University on October 13-14, 2023.

Friday: On Friday, Justin Dunmyre from Frostburg State University will lead a workshop titled Alternative Grading: Build-a-Syllabus Workshop. Dave Taylor of Roanoke College will give the banquet address, More Mathematics + More Magic = Even More Mathemagic.

Saturday: The morning address, Community and Belonging in Mathematics, will be given by Deanna Haunsperger of Carleton College. The Saturday afternoon address, Putting the Differential Back in Differential Calculus, will be given by Eugene Boman of Pennsylvania State University, Harrisburg.

See pages 4 and 5 for more information.

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UPCOMING MEETINGS

• Joint Mathematics Meetings
  January 3-6, 2024 in San Francisco, CA

• MD-DC-VA Section Spring Meeting
  April 26-27, 2024 at James Madison University

• MAA MathFest
  August 7-10, 2024 in Indianapolis, IN
Greetings Dear Friends,

I love this time of year – when the temperature starts dropping, the leaves start changing colors, and the number of mosquitos in my backyard start to dwindle. I hope you are getting outside amidst all the craziness that tends to come with this time of year!

The temperature sure is lower than it was in Tampa this past August! But I wouldn’t have wanted to be anywhere else – the energy was high in the Tampa Convention Center! I don’t know why mathematicians get such a reputation of being anti-social; the ones I run into at MathFest are all incredibly social! Thanks to all of you who were able to attend MathFest, and give a talk or make a new friend – and hopefully those of you unable to make it this past year can attend next August in Indianapolis! Proposal deadlines are coming up – October 15 for Contributed Paper Sessions, October 31 for Mini-courses and Invited Paper Session, and a few other later ones (https://mma.org/node/299023). Want to give a talk? You have TONS of time – but be thinking about it early next year!

At MathFest, Congress had its typical Meeting to chat about all the new things at the National Level. We had some proposed updates to the By-laws to discuss, which included:

- the addition of the Council on Sections, which includes a Committee of Section Concerns, chaired by Linda McGuire,
- a tweak to the Chair of Congress role (we elected Victor Piercey as the new Chair) – now the role is a 4-year term, going from Chair-Elect, to Chair for 2 years, and finally to Past-Chair, and
- a change to the length of term for a Section Representative, from 3 years to 4 years.

We also had initial conversations about the next 5-year MAA Strategic Plan and celebrated findings from the 2022 MAA Impact Report (https://2022report.maa.org/). Here are a few highlights from the report:

- Sum of Outreach Grants Awarded in 2022 - $472,309
- And Total Award Money Distributed in 2022 - $699,767
- Total Number of MAA Virtual Distinguished Lecture Series Views – 13,000+

The 4th OURFA*M² Online Conference (helping provide resources to undergraduate mathematicians, especially marginalized mathematicians) had 860 attendees – and the next conference is scheduled for Nov 18-19, 2023 (https://sites.google.com/view/ourfa2m2/home?authuser=0)

- Increase in memberships, 12% overall and 23% students

So, the MAA is doing well at the National level – and I know our Section is doing well, too! I can’t wait to see all of you at our Fall 2023 meeting on October 13-14. Look for a small hands-on session with me for exploring MAA Connect in our program (yes, bring your laptop, etc) and come find me at lunch! I’d love to hear what questions, concerns, and/or praises you’d like me to bring to the National Level – and get suggestions on ways you’d like me to report back to you!

Happy Fall!

Maggie Rahmoeller
MD-DC-VA Section Representative
rahmoeller@roanoke.edu
Luke Zolenski and other mathematics researchers at Salisbury University have been working on a research project titled “The Visualization of Sound.” They take audio files and, using a computer program they wrote, render digital art pieces that are mathematical representations of these songs, speeches, or podcasts. Above is the artwork created from MLK Jr’s “I Have a Dream” speech, the bottom right comes from The Rolling Stones “Miss You”, and the bottom left comes from a Silent Night cover by DJ Williams.

FRIDAY WORKSHOP: ALTERNATIVE GRADING: BUILD-A-SYLLABUS

While you may be ready to make a change and to implement an alternative grading scheme (e.g. standards-based/specifications/mastery/un-grading), you may still wonder exactly how to do this. Or maybe you’ve heard enough about alternative grading to be curious about it. In this workshop we’ll cover motivating considerations to assessing your students via alternative grading. We’ll also cover many pitfalls that I’ve walked into (willingly or otherwise). We will discuss recommendations on implementing alternative grading from various sources as well as examples from our own experiences. We will also discuss guiding questions that can form the scaffolding of your own grading scheme, with dedicated workshop time to solidify the ideas of the session. My goal is for the participant to leave the workshop empowered to switch classes to an alternative grading scheme and be excited to do so.

Justin Dunmyre is an Associate Professor of Mathematics at Frostburg State University. His Ph.D. is in Mathematics with dissertation and early publications in mathematical neuroscience. Later, he shifted his scholarship to focus on teaching and learning, with forays into mathematics education. He is excited to support faculty to explore ways to improve their teaching and to adapt frameworks in ways that support both the student and instructor. He has actively experimented with alternative grading since 2015 with implementations in a wide variety of classes, including: Gen-Ed Statistics, Calculus, Differential Equations, Linear Algebra, and Intro-To-Proofs. Justin has presented on designing alternative-grading systems for the Grading Conference and the MAA Webinar series, published on it in PRIMUS, and is eager to bring the lessons he’s learned about it to the workshop format.

Fall 2023 Section Meeting Highlights

FRIDAY BANQUET ADDRESS: MORE MATHEMATICS + MORE MAGIC = EVEN MORE MATHEMAGIC

When people think about magic, they tend to think about tricks, effects, routines, or illusions. In a way, it’s one of the only professions or art forms where intentional deception is not only allowed but expected. When people think about mathematics, they tend to think about it being hard and it many cases “not for them.” But, it’s also a crucial subject that everyone needs to appreciate and understand – at least enough to be an informed person in today’s world. The two overlap in an unfortunate way – too many people choose to “give up” at the first stumbling block rather than trying just a little bit more. This banquet show is not a solution to any of these problems, but rather it’s a show for all of to enjoy as a celebration of what can come out of “trying just a little bit more” and being brave about stepping over that stumbling block. The show will attempt to connect mathematical principles that most can already understand or use to highlight how and why some magic tricks work. And, the show will also most definitely include routines and effects that apparently have no connection to mathematics at all. Or, maybe they do and it just won’t be apparent at the time. It’s a show about fun and celebrating our Section and our wonderful community.

Dr. David Taylor is currently the Assistant Vice President for Academic Operations, Director of the Institute for Policy and Opinion Research, and Professor of Mathematics at Roanoke College where he has worked since 2007. His interests are varied, having moved from infinite dimensional Lie algebras in the 2000s, to probability and statistics, especially as they relate to casino and board games in the 2010s, to higher education administration and thinking through what higher education will look like in the 2030s and beyond. He is the author of Games, Gambling, and Probability: An Introduction to Mathematics, now in its second edition, as well as a co-editor of Living Proof: Stories of Resilience Along the Mathematical Journey, jointly published by the MAA and AMS and which was awarded the Euler Book Prize in 2022. He is starting his second term as Section Chair for this Maryland, DC, and Virginia Section, has not missed a Section meeting since the spring of 2007, and, since giving a “math talk” about magic last November, has advanced his “hobby” into a “professional hobby” – David is now a member of the American Society of Magicians, a member of the International Brotherhood of Magicians and owner of DT Magical Experiences, LLC.
SATURDAY MORNING ADDRESS: COMMUNITY AND BELONGING IN MATHEMATICS

How can building communities in mathematics help in our ongoing quest to make mathematics more inclusive? From social psychologists we can learn the importance of individuals feeling accepted, valued, and legitimate within their community—the importance of a sense of belonging. From successful communities we can learn the power, in the form of resilience and perseverance, that their members enjoy. Armed with this information, we can create communities to support members of underrepresented groups in mathematics.

Deanna Haunsperger is a former President of the Mathematical Association of America. She has served the MAA in numerous ways over the years, including as co-editor of Math Horizons, Second Vice President, co-Chair of the Centennial Planning Committee, and Chair of the Council on Outreach. She is the 2021 recipient of the Yueh-Gin Gung and Dr. Charles Y. Hu Award for Distinguished Service.

Haunsperger is passionate about opening doors of mathematics to everyone, and towards that aim she co-directed with Steve Kennedy the Carleton Summer Mathematics Program for Women 1995-2014, named by the AMS as a Program that Makes a Difference.

Haunsperger is co-Editor of several volumes, including The Edge of the Universe, A Century of Advancing Mathematics, 101 Careers in Mathematics, and Count Me In: Community and Belonging in Mathematics. She received the AWM M. Gweneth Humphreys Award for Mentorship of Undergraduate Women, the AWM President’s Award, and was an inaugural AWM Fellow.

Haunsperger is Professor of Mathematics at Carleton College where she has taught for over twenty-five years. She is married to fellow mathematician Steve Kennedy and has two adult children.

SATURDAY AFTERNOON ADDRESS: PUTTING THE DIFFERENTIAL BACK IN DIFFERENTIAL CALCULUS

The definition of the limit was the culmination of a 200 year effort to put a solid logical foundation under the Calculus invented by Leibniz and Newton. It is highly abstract, very subtle, and completely rigorous, but it disconnected from the previous mathematical experience of a beginning Calculus student. It is poor pedagogy to start the course with such an esoteric topic and I have long been frustrated with this non-intuitive approach to Calculus.

But Calculus did not begin this way. Leibniz and Newton’s invention was originally based on the less-than-rigorous, but highly intuitive notion of the differential (Leibniz) or an infinitesimal moment of time (Newton). I have long contended that differentials could provide a much better starting point for a student beginning a modern course in Calculus. My friend and colleague Robert Rogers (SUNY, Fredonia) and I have written an OER Calculus textbook supporting this approach. In this talk I will describe our goals for the book, how our text attains those goals, and what we learned in the process of writing it.

Eugene Boman is Professor Emeritus of Mathematics at the Harrisburg campus of the Pennsylvania State University. With Robert Rogers (SUNY, Fredonia) he has written, two mathematics textbooks: Differential Calculus: From Practice to Theory (2023), and How We Got From There to Here: A Story of Real Analysis (2014). In 2008 he won the Carl B. Allendofer Award for excellence in expository mathematical writing from the editors of Mathematics Magazine for the article “Mom! There’s an Astroid in My Closet” (Mathematics Magazine, Vol. 80 (2007), pp. 247-273).
NEWS FROM AROUND THE SECTION

◊ St. Mary’s College of Maryland has hired two new mathematicians in their department. A warm welcome to two of our new section members, Sara Chari and Stacey Chase!

◊ Dr. Kristen Boyle, assistant professor of mathematics at Longwood University, was awarded the Student-Faculty Recognition Award, annually given to one faculty member for professional excellence and service to students.

◊ Dr. Maggie Rahmoeller, associate professor of mathematics at Roanoke College, received the Roanoke College Dean’s Exemplary Teaching Award. This award recognizes teaching that not only focuses on the content and skills of one’s scholarly field, but also helps students develop as whole persons and prepare for lives of purpose and meaning. Although such teaching may take many forms, it is clearly demonstrated through an instructor’s design and implementation of a well-organized plan for learning, incorporation of new knowledge and emerging methodologies, engagement of students through activities and assignments, creation of a positive learning environment, rigorous expectations, clear assessment of student work, and ever evolving adaptation of pedagogy to communicate more effectively to each generation of students.

◊ Hollins University has been awarded a grant of $999,998 from the NSF S-STEM Program to educate the next generation of diverse, highly skilled leaders in the STEM workforce. Dr. Molly Lynch, assistant professor of mathematics at Hollins, is a Co-PI on the grant. Grant funds will support the development and implementation of Hollins’ Artemis Scholarship Program for Women in STEM, a program for undergraduates majoring in biology, environmental science, chemistry, and mathematics.

SECTION CHAIR’S REPORT

Greetings MD-DC-VA Section Members!

I hope that you, your families, and your friends are all well. Six years ago, I wrote my first report for this newsletter as Section Chair; now that I’m starting a second term as Section Chair, I can now report that this is my fifth report as Section Chair, my seventeenth year at Roanoke College, and my twenty-second year in the Maryland, DC, Virginia Section of the MAA.

I start this report with a negative; higher education as an institution is under attack. On the economic side, more and more institutions are reporting financial difficulties, gutting programs and faculty, and in some cases closing altogether. The recent news coming out of West Virginia University regarding program cuts and workload changes, along with articles in The Chronicle of Higher Education about places such as Finlandia University and Cazenovia College, are evidence of that. But higher education is also under attack from politicians and legislatures and from parents and families demanding programs that offer a direct-to-career outcome rather than programs that focus on preparing students to be lifelong learners, informed citizens, and critical thinkers.

All research that I’ve heard or read says that this second type of programs results in graduates that are better prepared for their first promotion or second job and that they result in graduates who report higher levels of happiness in their careers five years after entering the workforce. How do we, as educators and researchers, get this out as the narrative? How do we overcome dashboards and scorecards that measure an institution’s worth by its one-year or two-year job placement rate, or even worse, job salary data that early in their career?

Now, time for the positives. Even with artificial intelligence getting supposedly more intelligent and even with wild shifts in programs at our institutions, there will always be a need for students, and graduates, to be quantitatively literate; what that means may shift a bit, but as more and more decisions in the world are informed by data, responsible citizens need to know how to live in a world filled with numbers, with rates, with margins of error, with algorithms, and with logic. There won’t be a shortage in need for us. Why do we have sections meetings twice each year? Why does the MAA exist and have MathFest each summer?

It’s because of our community and our care for one another. It’s because we share ideas for the classroom, collaborate on new techniques and theorems in our discipline, and recognize each of us alone can’t fix problems facing our industry. But together, we can. I have no set “agenda” as Section Chair for my term other than providing an environment for us to help each other and to encourage talks, workshops, invited addresses, and working groups to turn the narrative back around.

I hope to see you all at Stevenson University on October 13-14; if not, always feel free to reach out to me with ideas and thoughts and I hope to see you in the spring, April 26-27, at James Madison University.

With hope and well wishes for all,

Dave
OPPORTUNITIES FOR UNDERGRADUATES

On Saturday October 7, James Madison University will host the 19th annual Shenandoah Undergraduate Mathematics and Statistics (SUMS) conference. Registration is free and can be done online until October 5, please visit www.jmu.edu/mathstat/sums for more information. On site registration is available as well. This year we are pleased to have keynote speakers: Dr. Pamela Harris of University of Wisconsin-Milwaukee and Dr. Mark Embree of Virginia Tech. There will be parallel sessions of talks and a poster competition. In addition, there will be Q/A panels for industry, grad school, and REUs. We hope you can join us at JMU in October! For any questions, contact: sums@jmu.edu

MORE: Mathematics - Opportunities in Research and Education 2023 workshop will be held October 21-22, 2023 with a main location at Clemson University in Clemson, South Carolina. The purpose of this conference is to bring together undergraduate students interested in mathematics to learn about opportunities in research and education. The participants will attend plenary lectures featuring cutting-edge mathematical research by leading mathematicians; interact with faculty, graduate students and postdocs; and attend panels on research, applying for summer opportunities and graduate school, and pathways to mathematical careers.

The first MORE conference was held in 2019. Information on previous MORE conferences is found here.
MORE NEWS FROM AROUND THE SECTION

◊ Graham Atkinson, a retired mathematician based in D.C. has been teaching mathematics courses for non-mathematicians for The Osher Lifelong Learning Institute at American University. The lectures are each 1.5 hours and to date he has taught the following courses:
  ◊ Mathematics in Fiction (8 lectures)
  ◊ Mathematics in Art (4 lectures)
  ◊ Mathematics in Poetry (4 lectures)
  ◊ Mathematics Elsewhere (4 lectures)

◊ Graham is currently working on two more courses: Mathematics in Music and Mathematics of Symmetry. The latter will have a lecture on the definition of symmetry and group theory, and then one on the Alhambra in Granada, and one on the work of MC Escher.

◊ Congratulations to all of our Undergraduate Research Conference Awards from the MD-DC-VA Spring Sectional held at Virginia State University on April 28-29, 2023.
  ◊ Student Paper Awards:
    ◊ 1st Place: Andre Mas, James Madison University, *FFEM for Elliptic State Constrained Optimal Control Problems*
    ◊ 2nd Place: Matthew Caulfield & Aidan Chadha, James Madison University, *Predicting the Jet Boundary of a Turbulent Coanda Wall Jet Using Experimental Test Results*
    ◊ 3rd Place: James Ripple, St. Mary’s College of Maryland, *The effects of grazing functions on mixotrophic plankton populations during seasonal blooms*
  ◊ Student Poster Awards:
    ◊ 1st Place: Britney Johnson of Stevenson University
    ◊ 2nd Place: Valentina Paz-Soldan of James Madison University
    ◊ 3rd Place: Joseph Egbo, Cameron Fonville, Paul Mustian of Virginia Military Institute

◊ Winning Jeopardy Team: James Madison University
◊ Winning Radical Dash Team: St. Mary’s College of Maryland
To the left, is a “Math Memes” wall from Roanoke College. This wall started in the Spring of 2023 and is open for all students, faculty and staff to post original memes about math! There are contributions from various members of the Mathematics, Computer Science and Physics Department at Roanoke College.

Below is an example of one of the memes:

**What happened to him?**

He found out $\ln(1+2+3) = \ln(1)+\ln(2)+\ln(3)$. 

**Mathematician**
**SECTION OFFICERS**

**Chair:** David Taylor  
Roanoke College  
taylor@roanoke.edu

**Past Chair:** Kathryn Linehan  
University of Virginia  
kjl5t@virginia.edu

**Representative:** Maggie Rahmoeller  
Roanoke College  
rahmoeller@roanoke.edu

**Program Chair:** Dina Yagodich  
Frederick Community College  
DYagodich@frederick.edu

**Vice Program Chair:** Blain Patterson  
Virginia Military Institute  
pattersonba@vmi.edu

**Secretary:** Tom Wears  
Longwood University  
wearsth@longwood.edu

**Treasurer:** Phillip Poplin  
Longwood University  
poplinpl@longwood.edu

**Newsletter Editor:** Molly Lynch  
Hollins University  
lynchme2@hollins.edu

**Director of Member Communication:**  
Amy Vennos  
Salisbury University  
advennos@salisbury.edu

**Student Activities Coordinator:**  
Jeff Ledford  
Longwood University  
ledfordjp@longwood.edu

**New Faculty Coordinator (Section NExT):** Jill Tysee  
Hood College  
tysee@hood.edu

**At Large Executive Committee Member:**  
Kristen Boyle  
Longwood University  
boykelk@longwood.edu

**At Large Executive Committee Member:**  
Ray Cheng  
Old Dominion University  
rcheng@odu.edu

**Webmaster:** Brian Heinold  
Mount St. Mary's University  
heinold@msmary.edu

**Awards Committee**  
Ann Stewart (Hood College), Jathan Austin (Salisbury University), Ethan Duckworth (Loyola University Maryland), Roland Minton (Roanoke College), Laura Taalman (James Madison University).

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**TREASURER’S REPORT**

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Balance, March 30, 2023 $5079.89

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Balance, October 1, 2023 $7603.39

### John G. Milcetich Student Achievement Fund
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Balance, October 1, 2023 $877.91

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Balance, March 30, 2023 $165.00

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Balance, October 1, 2023 $310.00

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Balance, March 30, 2023 $542.75

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Balance, October 1, 2023 $1040.75

### MD-DC-VA COMMIT (Previously: MD-DC-VA IBL Consortium)
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Balance, October 1, 2023 $1254.06