MAA MATHEMATICAL ASSOCIATION OF AMERICA

Mathematical Matters

Newsletter of the Pacific Northwest Section of the MAA

MARCH 2025

PNW MAA Spring Meeting: University of Washington, Tacoma

2025 PNW Sectional MAA Meeting
University of Washington, Tacoma
April 25-26, 2025

Abstract submissions will be accepted until March 25, 2025. Registration and more information is available at the conference webpage: `https://faculty.washington.edu/etou/maapnw2025/`. Hotels are available with a conference rate. To receive conference rates, please use the links on the conference webpage. Deadlines for these rates are as early as March 15.

This meeting's plenary speakers are:

Hortensia Soto

Steven Klee

Candice Price

Hortensia Soto
Hortensia is a Professor in the Department of Mathematics at Colorado State University. Her publications have centered on assessment, mathematical preparation of K-16 teachers, outreach efforts for high school girls, and the teaching and learning of undergraduate mathematics, where she adopts an embodied cognition perspective. For the past decade she has devoted her career to creating environments where students physically engage with abstract mathematics and researching how these environments impact students' learning. In particular, she has focused on the teaching and learning of complex variables and is now exploring the role of embodied activities in other courses such as abstract algebra and linear algebra.

Hortensia has mentored young women and promoted mathematics via summer outreach programs. She has facilitated professional development for K-16 teachers in Nebraska, Colorado, and California. Hortensia is a working member of the MAA where she has served as the Associate Treasurer, the Associate Secretary, as an editor of the MAA Instructional Practices Guide, and currently serves as MAA President. She is a proud recipient of the MAA Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics. In her spare time, she enjoys hiking, snowshoeing, practicing yoga, meditating, and spending time with her son Miguel.

Dr. Soto will speak on:
Creating Metaphors for Linear Algebra Concepts: Developing Cognitive, Behavioral, and Affective Domains. In this presentation I will take the audience on a journey of an introductory linear algebra class designed to help students develop a geometric understanding of basic linear algebra concepts. I will share some embodied activities that I implemented in the course and then share metaphors that the students created for basic linear algebra concepts. Preliminary findings of this work suggest that the embodied activities, linguistics, and students' identities informed the metaphors that they created. Moreover, I will showcase how this assessment illustrated students' cognitive understanding of the concepts as well as their behavioral and affective domains. The students expressed all three of these domains (cognitive, behavioral, and affective) via em-

bodiment including gestures, body posture, facial expressions, and tone of voice. In conclusion, I will share the value and challenges of such assessments..

Steven Klee

Steven Klee is an Applied Scientist with Amazon Web Services, where he builds mathematical and statistical models that try to predict the future. Before joining AWS he was a math professor at Seattle University and a long-time fan of the PNW section of the MAA. Mathematically, he studied problems in topology and graph theory, which were completely unrelated to trying to predict the future, but have still proven to be useful in his current role.

In his free time, he serves as an editor in chief for the AMC 8, an international math contest for middle school students, and organizes local math outreach programs in Seattle. Outside of math, he enjoys long walks in the woods, cooking with his son, and dividing by zero.

Dr. Klee will speak on:
What Are You Going To Do With a Math Degree?. In this talk I will share some of my story as a mathematician who has worked both as a professor and in industry. We'll learn about some of the basic mathematics behind machine learning and I'll share a sampling of how I have used those and other mathematical ideas in some of my recent projects at Amazon. At the end, I'll share some thoughts about why we need more mathematicians in industry, and offer some tips on how you can plan your studies if this career path sounds interesting to you (and even if it doesn't).

Candice Price

Candice Reneé Price, an esteemed African American mathematician, was born and raised in California. She has distinguished herself through contributions to mathematics through education and service. Growing up passionate about mathematics, Price earned her undergraduate degree (2003) in mathematics from California State University, Chico, and a master's degree (2007) in mathematics from San Francisco State University. She went on to complete her doctoral studies (2012) in mathematics at the University of Iowa, where her research focused on DNA Topology under the advisement of Dr. Isabel Darcy. Her published work now spans diverse areas of research including applied mathematics, mathematics of social justice, and discrete mathematics.

Beyond her research, Candice Price is known for her advocacy for diversity in STEM fields and her mentorship of aspiring mathematicians, particularly from underrepresented backgrounds. She has received numerous awards and honors for her contributions, including the 2022 Mathematics Association of America Inclusivity Award.

She remains a role model and inspiration, both as a distinguished mathematics educator and for her commitment to promoting inclusivity and diversity in the mathematics community.

Dr. Price's talk will be:
Can We Make Grace the Norm in Our Classrooms? For much of my life, I have been confused about the way that people perceive the relationship between students and instructors in the classroom, especially in mathematics. There is such an adversarial relationship that even sharing my career choice with strangers leads to groans and stories of trauma. I believe this is what happens in a classroom without grace. So, when I add grace the opposite should happen, right? During our time together, I hope to discuss with you the ways that we can incorporate grace into our classrooms and why many people think it is radical. I invite everyone to come and reflect on ways they can make grace the norm in their classrooms and spaces.

In addition to their talks, two of the plenary speakers (Dr. Soto and Dr. Klee) will host a panel discussion, along with Marion LaRocque, Business Intelligence Analyst, Washington State Department of Social and Health Services on *Careers and How to Catch One*. The panelists will share the stories of their various career pathways, path-lengths, and experiences across academia, industry, and government. In addition to exploring the panelists' myriad career pathways, significant time will be devoted to audience questions. We invite students who are curious about interview processes, faculty interested in transitioning to industry, or anyone looking for information about building or moving careers!

Other program highlights include:

- Minicourse: Transforming Textbook Problems Into Engaging Student Activities
- Special Sessions -
  - Removing Hurdles for Students in Mathematics Courses
  - Topics in Statistics and Data Science Education
  - Building A Collaborative Community in the PNW Section
  - Applied Mathematics
- Keep Calm and Puzzle On - an interactive session hosted by the UW Tacoma Math Club

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NExT News: Spring Meeting

by Megan Buzby

The Section NExT portion of our section meeting is Friday, April 25, 2025. The deadline for submission of abstracts for presentations, panels, or discussions is Friday, March 14 (pi day!). Please send submissions to Megan Buzby (mbuzby1@alaska.edu). Details about the program will be forthcoming on the Section NExT listserv. Looking forward to seeing you in Tacoma!

Stuart Boersma publishes first issue as Editor of Math Horizons

by Dominic Klyve

This February saw the publication of the first issue of Math Horizons for which Dr. Stuart Boersma (Central Washington University) served as Editor. Boersma served as Editor Elect during 2024, during which time he started soliciting articles and assembling the issue, which contains articles on Rubik's Cubes, puzzles, "Math in the Wild", and more (be sure to read it the issue!). He came into his position with a distinguished track record – his accomplishments and recognitions include the PNW Section Award for Distinguished College or University Teaching of Mathematics, the Trevor Evans Award for expository writing (in Math Horizons!), and a CWU Mentor of the Year award. Together with Dr. Cheryl Beaver (Western Oregon University), he designs and organizes the annual Kryptos competition in cryptography. Boersma replaces another PNW mathematician, Dr. Tom Edgar (Pacific University) as Editor.

Congratulations to Stuart Boersma!

A note from the editor

by Kate Kearney

If you have any major changes in your department or University, I'd love to highlight them in an upcoming "University Spotlight" column. Anyone from your department achieve a major accomplishment recently? Let's celebrate them! Please email me (kearney@gonzaga.edu) with any contributions or other section news.

University Spotlight: University of Washington, Tacoma

by Erik Tou

Founded as an interdisciplinary, urban-serving campus in the Puget Sound Metro region in 1990, University of Washington Tacoma has grown to a population of 4980 students in over 50 undergraduate degree programs and options, 15 graduate programs, and a variety of professional development courses and certificates. Named as the #1 top performer for social mobility in Washington by U.S. News & World Report, the UW Tacoma campus consists of 23 buildings on 46 acres with a total of over 1 million square feet of active campus space. The Mathematics B.S. degree program began in 2015, and a new B.S program in Statistics and Data Science will be introduced in the 2025-26 academic year. The proposed program will provide students with fundamental knowledge and skills related to probability, mathematical statistics, experimental design, data analysis, data management, and statistical computing, including machine learning and Bayesian statistics. Equipped with this theoretical and practical knowledge, graduates will be well-positioned for careers in industry as well as to continue with graduate degree programs.

MATH + FUN = SUMM

by Jenny Quinn, Executive Director, Seattle Universal Math Museum

There are less than 100 math museums in the entire world, and only a handful in America. Fortunately, one of them, the Seattle Universal Math Museum (SUMM), is here in the Pacific Northwest.

At SUMM, we believe that math is universal, and everyone can be a mathematician. It doesn't require a fancy degree or discovering a new theorem—only engaging in mathematical thought. Founded in 2019 by Tracy Drinkwater, SUMM is committed to making mathematics accessible and equitable for all learners. SUMM's mission is to spark each and every person to love math.

SUMM's long-term goal is to create a flagship museum, filled with interactive exhibits. It will be a place for families to play together or school groups to have mathematical adventures. Meanwhile, SUMM partners with schools, community centers, libraries, farmers markets, and other museums in the Puget Sound region to deliver engaging, hands-on math activities at public and private events. During the 2024 calendar year, SUMM held more than 360 events, reaching 15,000 humans. Seventy-five percent of those programs were in communities of opportunity, meaning communities furthest from equity, and most of those events were funded by grants or donations and offered free of charge.

Our values shape every decision we make, every event we undertake, and the math learning we celebrate. By bringing play to mathematics, we spark fun and joy. Our open-ended explorations inspire creativity. We welcome and engage learners of all ages, backgrounds, and abilities. Math learning does not happen in isolation, and we encourage collaboration and communication between peers, in classrooms, in families, and in community. BIPOC students, girls, neurodiverse and non-traditional learners often become discouraged and lose confidence in their math abilities in elementary and middle school; for them SUMM can be a place of belonging. A place where inclusion is practiced, and diversity is valued. SUMM brings math to life.

I joined the SUMM staff in June 2024 as Executive Director. After serving as President of MAA in 2021 and 2022, I looked for an opportunity to have a greater impact on community perceptions of mathematics and this position was a perfect fit for my personal and professional goals. Running a non-profit is nothing like teaching at a University and I learn something new every day. I regularly get asked whether I miss teaching or not. I can honestly say, I miss my academic colleagues and my students at the University of Washington Tacoma, but I do not miss the grading. Besides, when I participate in SUMM events, I am teaching; I'm just working towards different learning outcomes.

SUMM moved into an office and event location in South Seattle last fall. Now some of our events happen there and it is far superior to working out of a Public Storage and the founder's garage. We actively seek support and participation from the community. Individuals can contribute by attending events, volunteering, or making donations to sustain and expand the museum's initiatives. Such involvement ensures the continued promotion of and appreciation for mathematics within the broader community.

There are several events that may be of interest to PNW MAA members:

- **Pi(e) for a Purpose** (Friday, March 14, 2025): SUMM's annual Pi Day celebration and fundraiser. The evening event features exhibit previews, dinner, live auction, and an live math + magic show by Art Benjamin. Bid on incredible experiences like a Lake Washington boat outing, a Math Puzzle Party, or a Lopez Island retreat—all in support of SUMM's mission!
- **Intersections: Math, Art, Truth, + Humanity** (March 3 – April 25, 2025): This free exhibition, hosted in collaboration with the Mercer Island Visual Arts League, explores the convergence of mathematics and art. It features interactive and thought-provoking artworks that reveal the humanistic side of mathematics.
- **Benjamin Banneker Math Room at the Northwest African American Museum (NAAM)** (Every Saturday, 10:00 AM – 2:00 PM): This ongoing event offers visitors an opportunity to delve into the legacy of Benjamin Banneker, an influential African American mathematician and astronomer. The Math Room is a collaboration between SUMM, MathHappens, the Benjamin Banneker Association, and NAAM. It provides hands-on activities and educational materials suitable for all ages. (Museum admission is required.)

For a comprehensive list of events and further details, please visit SUMM's official events page seattlemathmuseum.org/events.

This spring, SUMM's Board of Directors is engaging in strategic planning to set priorities for the next 5 years. We want the museum to reflect the wants and needs of our community. Your input would be invaluable. If you are interested in participating in some way, please contact me at jenny@seattlemathmusuem.org.

I look forward to sharing more with you in person at the Spring PNW MAA Section meeting where you will get the opportunity to see how awesome my UW Tacoma colleagues are for yourself.

2025 Pacific Inland Mathematics Undergraduate Conference

Saturday April 5, 2024
Eastern Oregon University, La Grande, OR

Save the Date! Eastern Oregon University is pleased to host the 7th annual Pacific Inland Mathematics Undergraduate Conference (PiMUC) on Saturday April 5th, 2025.

PiMUC is a wonderful opportunity for undergraduate students in the Pacific Northwest Inland Region to present their work including, but not limited to: senior capstones, individual research projects, and original solutions to mathematical contests. Topics in every area of mathematical sciences are welcome including: theoretical math, applied math, statistics, data science, and math education. For more info and conference registration please investigate the PiMUC 2025 website. Questions? Contact Dr Amy Yielding at ayielding@eou.edu.

https://sites.google.com/view/pimuc/home

KRYPTOS: A Series of Cryptanalysis Challenges, April 10-14, 2025

KRYPTOS is a contest open to undergraduate and high school students. The theme of the contest is centered around the breaking, or cryptanalysis, of ciphers (secret writing). Each challenge presents contestants with a brief scenario together with some ciphertext (encoded message). The goal is to discover the original plaintext message!

While it is not the intent of this contest to test overly technical aspects of cryptanalysis or advanced mathematical algorithms, some familiarity with basic codemaking and codebreaking is certainly helpful. See the KRYPTOS web page for some helpful resources.

We had nearly 150 students participate last year and many have been clamoring for more! Please announce this contest to your students! Cool prizes are sent out to first and second place winners!

Visit the competition site for more information – including instructions on registering students for the contest.

Registration will begin in early March. KRYPTOS is sponsored by the MAA Pacific Northwest Section with Central Washington University and Western Oregon University.

Great Puzzle Hunt

The 9th Annual WWU Great Puzzle Hunt: Saturday, April 26, 2025, 9:30 AM – 5:00 PM (PT)

The WWU Great Puzzle Hunt is a fun, full-day, team puzzle-solving event that is OPEN TO ALL, anywhere in the world! The event is hybrid with options to play in-person or virtually. Teams of up to 6 work virtually or travel on foot to various locations on WWU campus solving a total of four hour-long puzzles, gathering clues along the way to solve one final meta puzzle. The event is FREE, but donations are gratefully accepted, and registration is required. Registration ends 11:59 pm April 24, 2025 or earlier if capacity is reached. Be a part of the fun!
You can also visit our website: `https://www.greatpuzzlehunt.com/`

πmuc 8TH ANNUAL

Pacific Inland Mathematics Undergraduate Conference

APRIL 5TH, 2025

REGISTRATION IS FREE AND OPENS IN JANUARY

- **Talk and Poster Presentations in all areas of Mathematics are welcome!**
- **Hosted by Eastern Oregon University.**
- **Share your results with undergraduates throughout the inland northwest!**