Wisconsin Section
Mathematical Association of America
NEWSLETTER
Spring 2021

Representative's Report

By Thomas Drucker, UW-Whitewater

There is not nearly so much to report from the Congress since there has not been a meeting since the summer. Items that may be of interest include the availability of speakers from organizations other than the MAA for section meetings. We are already entitled to a lecture by an editor of an MAA publication and there is also the Polya lecturer (available to the section on a rotating basis).

There are various categories for membership at this point. There is an introductory rate for life memberships. There is a rate of $100 a year for the retired category (those who have belonged for at least 25 years and who are no longer actively employed). There is a transitional rate of $59 a year for graduating student members for the first two years after graduation. Finally, there is a VITAL category (aimed at visitors, instructors, teaching assistants, adjuncts, and lecturers) at $70 a year.

The Association is always grateful for stories about ways in which members are involved in promoting mathematics, especially if they involve resources offered by the MAA. There is also some eagerness to promote use of the MAA Connect feature for communication. Messages can be sent to the whole national group or just to our section.

Finally, we just concluded a meeting that was both a first and a last. It was the last Joint Mathematical Meeting at which the MAA was one of the sponsors. It was also the first such meeting to be conducted virtually. If you were registered for the meeting, you should have received an evaluation form to fill out online. If you were not registered but have opinions that you would like passed along, please let me know and I'll be happy to steer them to the Congress and beyond. No announcement has yet been made, but the betting is that MathFest over the summer is going to be virtual, especially since it's scheduled for California.

Contents

Bylaw Revision

The MAA is now requesting that each section review their bylaws every ten years. Proposed changes to the bylaws are posted on the web site at http://sections.maa.org/wisconsin/bylaws.shtml. The Section will vote on these changes at the Business Meeting in April 2021. They will then be forwarded to the Committee on Sections. If approved, they will be returned for final approval by the Section at the April 2022 Business Meeting.

Chair's Report

By Kseniya Fuhrman, Milwaukee School of Engineering

Greetings! What a year it has been! This year has not been easy for many of us as it has brought many challenges and tests. I am happy that in the midst of the increased work and everyday life burdens, the planning for the annual spring meeting is going strong. The 88th annual spring meeting of the Wisconsin Section of the MAA will be held virtually on April 22-24, 2021. Chair-elect **Ken Price** (UW-Oshkosh) is putting together a great program. **Talithia Williams** (Harvey Mudd College), **Lisa Marano** (West Chester University), **Eric Rawdon** (St. Thomas University), and **James Sellers** (University of Minnesota - Duluth) will be our invited speakers. I thank Ken and the rest of the program committee for their hard work in organizing the meeting. Please consider giving a contributed talk and encourage your students to do so as well. More information about the spring meeting can be found on the meeting website.

We will have the section business meeting on the morning of Saturday, April 24th. I hope that many of you will consider attending. We have several agenda items, including the election of Chair-Elect, review of the upcoming opportunities for involvement on the executive committee, and discussion of the draft of the new section bylaws. I would like to thank **Ben Collins** (Epic), **Claire Hemenway** (UW-Stevens Point at Wausau), **Wesley Hough** (UW-Whitewater), and **Jon Kane** (UW-Madison), who worked on the revision of the section bylaws.

This year, **Irfan Ul-Haq** (UW-Platteville), will conclude his service as Immediate Past Chair. We thank Irfan for his leadership and dedication to the section.

Stay safe and healthy, and I hope to see many of you at the spring meeting.

Student Activities Report

By Balamurugan Pandiyan, UW-Whitewater

In the virtual Spring meeting, there will be an activity for students – a missing values data contest. Students will receive two de-identified datasets and time during the meeting to work on handling the missing values within the datasets. We encourage students to use R software, which is freely available for download. In addition, we also plan to provide an introductory video lecture on R software for all participants. The video talks about how to import and export datasets, handle missing values with R and create a final report of the analysis. Students are expected to submit the final report for the winner to be judged. The top 10 students win a $20 Amazon eGift Card. To increase awareness about the student activity, the flyers will be distributed to the organizers and speakers. Please encourage your students to attend whether or not they are able to give talks.

Section NExT-Wisconsin

By Wesley Hough, UW-Whitewater

The Section NExT – Wisconsin 2020 Fall Conference was held virtually on Saturday, November 7, 2020. We were pleased to have **Jessica O'Shaughnessy** from Shenandoah University as our keynote speaker. Professor O'Shaughnessy discussed mastery-based grading in the undergraduate mathematics classroom. We had 15 members in attendance, which is much higher than last year's conference attendance of 4. Additionally, four of this year's members gave presentations on topics related to power sums, the 2020 stock market crash, the linear algebra underlying defects in crystal formation, and undergraduate research experiences. Furthermore, we announced an opening for a Co-Director of Section NExT – Wisconsin. Interested candidates should contact the current director, Wesley Hough, at houghw@uww.edu.

Due to the virtual nature of the Spring 2021 MAA-Wisconsin annual meeting, Section NExT – Wisconsin has elected to host their 2020 Fall Conference independently and virtually through Webex. This spring's theme is "Lessons Learned from Teaching during the COVID-19 Pandemic," and was held virtually from 10:00 AM to 12:00 PM on Saturday, February 20, 2021. Panelists included **Holly Attenborough** (UW-Platteville), **Kseniya Fuhrman** (MSOE), and **Nathan Warnberg** (UW-La Crosse), and they shared some of their teaching successes and failures during the pandemic. There was also be time for attendees to share their own teaching ideas and experiences.

Contests

By Laura Schmidt, UW-Stout

The American Mathematics Competitions 8 was held on November 10-16, 2020 (online or in-person options). A total of 245 Wisconsin students participated in the competition. This is significantly less than past years, but of no surprise given the challenges of COVID. The last few years' numbers were 528, 577, 549 and 552, and a significant drop from earlier years of about 959 and 1,300. No students received perfect scores from Wisconsin. The average score for Wisconsin students was 10.42, compared with the national U.S. average score of 10.01. For the sixth year in a row Wisconsin has outperformed the US average! This is a great trend for our Wisconsin students.

The AMC 10 and 12 contests will be held on February 4th and 10th, 2021. Data will be reported at the Spring Meeting.

The MAA-Wisconsin Section High School Contest Examination was given on Thursday, December 3rd, 2020. There were 22 schools reporting scores this year for a total of 321 students. Due to COVID we had much fewer students participating this year. The test was offered in multiple formats online/in-person. The number of schools participating did not go down too much (37, 45, 50 and 44 schools in past four years), however there was a large drop in the number of students (829, 713, 930 and 1,157 students in past four years). We will see how numbers look in 2021 next December. The cutoff for the top 1% was a score of 109 out of 120 this year. Due to the large number of perfect scores last year the test difficulty was raised. There were 3 perfect scores this year. The students with perfect scores were **J. Wood** and **T. Rose** (11th graders, Marquette University HS), and **D. Zhou** (11th grade, Hartland Arrowhead HS). Congratulations to all of them!

Our hosts completed their third year directing the contest; **Kevin Haertzen**, and the University of Wisconsin – Platteville. Thank you for your willingness to host the contest.

Candidates for Section Officers

Candidate for Chair-Elect

Chunping Xie received his Ph.D. degree in Harmonic Analysis from the University of Alabama. He worked at Arkansas Tech University before he joined Milwaukee School of Engineering as Associate Professor in Mathematics Department in 2008. He has been an MAA member since 2001. He won the highest teaching award in MSOE – the Oscar Werwath Distinguished Teacher Award in 2017. He has 20 publications in peer reviewed national and international journals.

Dr. Xie is a long-term member of MAA and has been active in the activities of MAA sections both at MAA Oklahoma-Arkansas Section in the past and MAA Wisconsin Section currently. He periodically presents his research papers and gives talks on the Section Meetings. He has been the liaison of Mathematics Department of MSOE to the Section for more than six years. He has built his unique perspectives as a scholar with international and national working experience, and along with his years of participation in MAA, he is eager to share his vision and expertise. He is willing and fully ready to serve the Wisconsin Section through the Chair-Elect role.

Candidate for Secretary-Treasurer

Jonathan Kane retired from teaching mathematics and computer science at UW-Whitewater for 32 years and is now an honorary fellow at UW-Madison. He is very active in the math contest community as a member of the American Mathematics Competitions AMC 10/12 Committee, the American Invitational Mathematics Exam Committee (where he is coeditor-in-chief), the USA Mathematical Olympiad Committee, and the MAA Committee on Competitions. He writes the majority of the problems and coordinates the Purple Comet! Math Meet, the free, annual, international, online, team mathematics competition designed for middle and high school students. Jon is also on the UW-Madison Math Talent Search Committee. Jon teaches at summer mathematics camps in America and at winter mathematics camps in China. His textbook "Writing Proofs in Analysis" was published by Springer in 2016, editions of his coauthored textbook "American Mathematics Contests: A Guide to Success" were published in China in 2017, 2018, and 2021, and his coauthored MAA publication "The William Lowell Putnam Mathematical Competition 2001–2016: Problems, Solutions, and Commentary" appeared this fall. Jon likes being active in the Wisconsin MAA and is glad to serve another term as Secretary/Treasurer. Jon also enjoys biking, swimming, hiking, bridge, chess, puzzles, leathercraft, and photography.

Distinguished Teaching Award

The Wisconsin Section Distinguished Teaching Award was established in 1991. It stands as a concrete statement that mathematicians at the college and universities in Wisconsin place high importance on teaching. The Wisconsin Section is proud of its growing list of award recipients. These men and women of mathematics who have been recognized for their excellent work as teachers represent the commitment to teaching that exists among mathematicians throughout the state.

The deadline for nominations for the 2021 Wisconsin Section Distinguished Teaching Award has been extended to March 15, 2021. The nomination form and instructions are available on the MAA-Wisconsin web site at http://sections.maa.org/wisconsin/award.shtml

Volunteers Needed

The Section is looking for volunteers to fill vacancies on the Executive Committee.

Our most pressing need is to find a **Mathematics Contest Coordinator**. The Mathematics Contest Coordinator oversees the selection of a director for the Wisconsin Section Contest and reports the results of the Wisconsin Section Contest and the American Mathematics Competitions contests at the annual meeting. This is a three-year, appointed position. The current Mathematics Contest Coordinator would like to step down.

The Section continually seeks nominations for **Chair-Elect**. This is a three-year, elected position. The Chair-Elect organizes the spring meeting. The following year, the Chair-Elect becomes Chair, and presides at each meeting of the Section and of the Executive Committee of the Section, as well as appointing committees and Executive Committee members as needed. The final year, the Chair becomes Immediate Past Chair, continues to sit on the Executive Committee, and oversees the selection of the Distinguished Teaching award recipient.

We are also seeking volunteers for the following positions. The current holders of these offices have expressed interest in continuing:

Secretary-Treasurer. The Secretary-Treasurer maintains correspondence between the Wisconsin Section and MAA headquarters including submitting reports to the MAA, keeps records of all income and expenses of the section, and maintains the section bank account. This is a three-year, elected position.

Student Activities Coordinator. The Student Activities Coordinator promotes the involvement of students in activities of the Section and serves as a source of information for various student programs and other activities. This is a three-year, appointed position.

For more information on the duties of the MAA-Wisconsin Executive Committee, see the Executive Committee Handbook. Send nominations to Section Chair Kseniya Fuhrman at (fuhrman@msoe.edu). Self-nominations are encouraged. Section officers must be members of the MAA.

Project NExT Mentors Needed

Each year the MAA Committee for Early Career Mathematicians, in cooperation with Project NExT, assigns mentors to early career mathematics faculty (Project NExT fellows and others who request mentors). This year's Wisconsin faculty mentees have been assigned mentors from within MAA-WI. It would be great to have a running list of volunteer mentors, so that this process can be done more efficiently (and effectively) in years to come. If you're interested in being a future mentor, please email **Holly Attenborough** (attenborough@uwplatt.edu). Emailing now doesn't obligate you to serve: it will just help the committee know whom to ask first. Thank you so much -- mentoring is a great way to contribute to our section of the MAA!

What does a mentor do?

Each mentee is matched with a mentor from another institution, and then the two of them decide how they want the relationship to work. Sometimes pairs meet at section meetings. Sometimes pairs meet at national meetings. Sometimes, when pairs are geographically close, they actually meet at each other's universities. Sometimes pairs only communicate via email. In addition, mentors are added to a listserv that includes all other pairings. For Project NExT, the listserv only includes Fellows and Mentors for the current year, but for ECM, the list is cumulative. Mentors can just chime in when a question comes across the listserv that they're able to answer or discuss.

88th Annual Meeting of MAA Wisconsin Section

April 22-24, 2021, Online

Organization

This is the first time MAA Wisconsin has organized an online conference. The executive committee formed a program committee to collaboratively develop the plans offered here. The program committee was headed by the Chair-Elect of Wisconsin MAA and included the chair, the immediate past Chair, the Secretary-Treasurer, and the Public Information Officers. The committee also sought advice from the student contests coordinator and the Section NExT-WI Director. We are all excited about this virtual meeting and hope to provide an enjoyable and rewarding online conference experience.

The meeting will be conducted using MAA's Zoom platform. Opportunities to socialize online will be provided for thirty minutes before each invited speaker's presentation. A complete and final program will be available online before the meeting begins. It will include a mix of day and evening events.

Please check the MAA Wisconsin section website regularly for the latest information available. Send any questions you have to wi-maa-meeting2021@uwosh.edu.

Contributed Talks

Time for contributed talks is available during the afternoons on Thursday, April 22, and Friday, April 23. More time is available in the morning and early afternoon on Saturday, April 24. The contributed talks are offered in parallel sessions. Please note that registering a contributed talk does not register you for the conference.

Due date: March 26, 2021.

Talks received after March 26 will be considered only as time and space permit.

Faculty: Talks of all kinds are welcome, particularly ones that are accessible to students. If you wish to present a talk, please complete the form at:

https://www.emailmeform.com/builder/form/j03vOPgzc497a

Students: The Wisconsin Section of the MAA welcomes and encourages undergraduate students who have done research in mathematics to give a 25-minute presentation about their work individually or in groups at the spring meeting. If you wish to present a talk, please complete the form at:

https://www.emailmeform.com/builder/form/7722q35r5O

Registration

You must be registered to attend any meeting-related activity. Faculty and other non-students pay only a $10 registration fee and students may register for free.

Registration deadline: April 20, 2021

http://sections.maa.org/wisconsin/registration_form/index.html

Invited Speakers

Lisa Marano, West Chester University

Mathematics and Community Engagement: A story about finding mathematical problems in the community and bringing mathematics into the community

ABSTRACT: First-year seminars, learning communities, service-learning courses, undergraduate research projects, and capstone experiences are among a list of high-impact educational practices compiled by George Kuh (2008), which measurably influence students' success in areas such as student engagement and retention. It is recommended that all college students participate in at least two of these HIPs to deepen their approaches to learning, as well as to increase the transference of knowledge (Gonyea, Kinzie, Kuh, & Laird, 2008). In Mathematics, if a student participates in service-learning, it is typically in the form of tutoring, in conjunction with a school or with an after-school program, or consulting for a non-profit by modeling or performing statistical analysis. Today, I will discuss a number of service-learning projects which were developed for mathematics courses, neither of which involves these traditional opportunities. I will also describe my current research project which has potential impact on my community and yours.

Eric Rawdon, University of St. Thomas

Some applications of knot theory in the sciences

ABSTRACT: People are often perplexed when I tell them that I study knots. While I do enjoy letting them stew in confusion for a few moments, I eventually explain to them that knot theory does have some cool applications. I will talk about a few different "applied" projects I have been involved in over the years. In particular, I will talk about knots and links in proteins, the action of topoisomerases on DNA, and knotting in subatomic particles.

James Sellers, University of Minnesota Duluth

Revisiting What Euler and the Bernoullis Knew About Convergent Infinite Series

ABSTRACT: All too often in first-year calculus classes, conversations about infinite series stop with discussions about convergence or divergence. Such interactions are, unfortunately, not often illuminating or intriguing. Interestingly enough, Jacob and Johann Bernoulli and Leonhard Euler (and their contemporaries in the early 18th century) knew quite a bit about how to find the exact values of numerous families of convergent infinite series. In this talk, I will show two sets of exact results in this vein. The talk will be accessible to anyone interested in mathematics.

Talithia Williams, Harvey Mudd College

Data-Driven Decision Making: Now and Imagined

ABSTRACT: Technology has a history of being a catalyst of change in training and education. We've seen it with desktop computers and, more recently, with the emergence of smartphones. But those shifts, substantial as they were, pale in comparison to the next big technological disruption: Data. In this fascinating talk you will discover how the advancing world of data analytics is forever changing the future of learning and work. You will explore the full landscape of data analytics, looking at both the expanding ways in which data is generated, and the advancements in analytics that make that data actionable. You will hear examples of data being used to better understand performance in both education and enterprise, and learn how those insights are being used to inform decision making and transform society.

Know Your Wisconsin Mathematician

Interview with Benjamin V.C. Collins, Professor Emeritus at UW-Platteville
By Benjamin V.C. Collins, Epic

In fifteen years of KYWM, no one has ever interviewed themselves before.
Well, I talk to myself all the time. I don't see why I can't interview myself.

Where did you grow up?
My father changed jobs several times while I was growing up, and changed careers once, too. So I moved around quite a bit. I lived the first part of my life in small towns in Michigan. I lived for a while on Staten Island, in New York City. When I was in high school, my family moved to Pella, Iowa, where my mother still lives today.

When did you decide that mathematics was what you wanted to do with your life?
I was always good in math and got ahead of my classmates while I was in middle school. I took college math courses in high school, when that was somewhat rarer than it is today. So when I went to college, majoring in math seemed to be the thing to do. I wasn't sure what I wanted to get out of a math major. It wasn't until I was in graduate school, and the teaching bug hit me, that I really realized that that was going to be my career.

Paul [Terwilliger] was a terrific mentor. He was always the most generous with the things that he valued the most –his time and his ideas.

Where did you go to undergraduate school?
I went to Central College in Pella, where both of my parents were teaching at the time. It was a very fortunate choice. As I say, I wasn't sure what I wanted to do – I was also thinking about majoring in Theatre – and so I didn't seek out a school with a well-known math program. But Central's program was right for me. They didn't generally have a lot of students come through headed for graduate school in math, but they nevertheless delivered a rigorous education. I went to grad school with students whose undergraduate degrees were from Princeton, M.I.T., Northwestern, Michigan, etc., and I never felt out of my league. Most of them had had more courses than I had, but they didn't have a better foundation.

What about graduate school?
Right after Central, I went to Ann Arbor, to the University of Michigan. I spent three years there and earned my master's degree. It was a great time, and I still have some friends from those days. That's where I got my first exposure to teaching.

After some time off (about which more anon), I came to Madison and enrolled in the Ph.D. program. I was very lucky to become the very first graduate student under a young man named **Paul Terwilliger**. (I was not the first of Paul's students to earn my degree, but by golly, I was the first to sign on!) Paul was a terrific mentor. He was always the most generous with the things that he valued the most – his time and his ideas. I don't think it's an exaggeration to say that I couldn't have finished my Ph.D. without him.

What was the influence of your family on your education?
My father had a Ph.D in education. My mother has an Ed.D., also in education. My sister has two master's degrees. So I grew up with the expectation that education was good, and wasn't necessarily going to stop after one undergraduate degree. I think my family would have supported me if I had dropped out of school to become an actor, but they certainly would have been surprised.

Are there any teachers who had influenced you to become a mathematician?
As I alluded to earlier, the core faculty at Central when I was there had a major influence on me. They were **Lee Graber**, **Don Meyer**, **Agnes Andreassian**, and **Tom Iverson**. Those four really shaped not only the way that I saw mathematics, but also the way that I taught it. Certainly, early in my teaching career, I consciously used them as role models.

I don't think Paul Terwilliger ever really understood my drive to teach. He has always been caught up in the beauty of research mathematics. (Although I will say that

he is also a very good teacher.) But he also supported me in making my own choices, and I respect him for that.

How did you end up at UW-Platteville?

After my master's degree, I needed a little time to decide if teaching was really the thing that I wanted to do. I had enjoyed being a Teaching Assistant at Michigan, where they have a really good program. But I wasn't sure if it was something I could do full time. That was the late 1980's, a period where one could get a temporary job with a master's degree, and that's what I did. I taught for two years at St. John's University and the College of St. Benedict in Minnesota. That was another very fortunate choice for me. A lot of programs would have taken this young, temporary guy and stuck him in all the lower-level courses and tried to keep him out of trouble. But the department at CSB/SJU treated me almost as if I was a full-time member of the faculty. They let me teach a variety of courses and let me participate in faculty governance to a limited extent. They supported me when I needed it and gave me room to experiment in my classroom when I needed that. I still have friends from that time, thirty years later.

I will stack [the UW-Platteville Math Department] up against any math department in the state in terms of delivering a quality undergraduate education in mathematics.

Unfortunately, they weren't hiring when I finished my Ph.D. in 1996, so I went to teach at Midland Lutheran College, in Fremont, Nebraska. That was a tenure-track position, and I got along well with most of my colleagues, but I wasn't really satisfied. After a few years, I went back on the job market in a very focused way. In 2000, when I applied for the job at UW-Platteville, I only applied for three other jobs. I was one of three people hired at Platteville that year, and I was mostly happy for my twenty years there.

My former colleagues at Platteville were a terrific group to work with. I will stack them up against any math department in the state in terms of delivering a quality undergraduate education in mathematics. Some of them are very traditional, chalk-and-talk sorts of teachers. Others are more innovative. But at the end of the day, they are all committed to delivering the best education that they can, and they all work together to do that. I felt very much at home there, and I like to think that I contributed my share.

The students at UW-Platteville are terrific. There are a high percentage of first-generation students. Some don't have good preparation for college, or good support systems. But most of them work really hard, and they are serious about their studies.

And yet, you left.

I did. It's no secret that the UW System, as a whole, has been struggling for at least the last five to ten years. Declining enrollments have led to budget problems. A lot of decisions have been made, not all of which, in my opinion, have been in the best interests of the students. For some time, we've all been struggling as the University tries to do more for students with fewer resources.

In the fall of 2019, UW-Platteville announced a Voluntary Separation program, with incentives for faculty of a certain age and tenure to take early retirement. As it happened, I was among the very youngest faculty who were eligible for the program. It was a hard decision, but I decided to take the buyout and take my life in a new direction.

How are you settling in at Epic?

It was a very strange time to start a new job. I have a bunch of new colleagues whom I have never even met face-to-face. All my meetings take place remotely. Nonetheless, I have managed to get to know some people. My new colleagues are extremely smart and have been very welcoming. I have had a lot to learn – about the healthcare industry and about programming in M – and they have been great about helping me. I'm just beginning to get comfortable in my new role.

Do you use mathematics at Epic?

Well, I am never called on to integrate rational functions. My job is to help customers who want the software to do something in particular. Maybe it's malfunctioning, or maybe it's just something they would like to be able to do but can't figure out how. I have to figure out what's wrong, or if the thing they want is possible. That means I have to select from a variety of tools and possible

approaches and figure out which is the best one to answer this particular question. To me, that's mathematical problem solving.

Will you go back to teaching some day?
Never say never.

What courses did you like to teach?
I loved to teach the History of Math course. I have been hooked on the history of math since reading *Journey Through Genius* by William Dunham, shortly after it first came out in the late 1980s. There is so much interesting material there. I also loved to teach Discrete Math, which at UW-Platteville also serves as an intro to proofs course. A lot of students struggle with it, but a lot also find it an exciting gateway into a whole new way of looking at math.

Really, I always tried to make the best of whatever courses I was teaching. The rewards are different for teaching Precalculus than they are for teaching Abstract Algebra, but the rewards are there.

I have to select from a variety of tools and possible approaches and figure out which is the best one to answer this particular question. To me, that's mathematical problem solving.

What of your work do you like the best? What are you most proud of?
I'm always happy to hear from former students who have positive memories of my courses. Of course, I'm still in touch with some former math and engineering majors. (In fact, I've run into several of my former students at Epic.) But sometimes I'll just run into a business major or an English major from years before who will say, "I understood math in your course, and I never expected to." That means a lot to me.

How have you been you involved with the MAA?
I started as a student member, when I was an undergraduate at Central, so I have passed the 35-year membership mark. I wasn't really active, though, until I arrived in Wisconsin for the second time, in 2000. I became the second director of Section NExT-Wisconsin, then called Project NExT-Wisconsin. **Jen Szydlik** was the first director, and those are tough shoes to fill. When I was done with that, I became the Public Information for the section, a post which I have held for fifteen years, up through this spring. I was part of the ad hoc committee to rewrite the bylaws in 2012, and I'm chairing the current committee to review and revise them again, now that the Association is requiring a review every 10 years. I have also served as the unofficial historian of the Section.

At the Association level, I was a member of the Committee on Sections for six years. I have also just been named the Vice Chair for Services for the Business, Industry, and Government Special Interest Group of the MAA (BIG SIGMAA).

What is your advice to college students and new teachers?
Never be afraid to challenge yourself. It has been quite an adventure to leave my teaching job, where I was comfortable, and good at what I was doing, for a brand-new job that needs new skills, where I'm once again the new kid on the block. It hasn't always been easy. But it was the right thing for me.

If you don't like where you are right now, take stock. Find the things that you do well and strengthen them. Find the things that aren't working and change them. If I can change at my age, you can certainly change things that aren't working for you.

Who is a Wisconsin Mathematician that you would like to know? Send suggestions for the next KYWM to Anthony van Groningen vangroningen@msoe.edu

In Memoriam, Charlotte Chell

By Mike Moore, Carthage College

Even as they mourn the loss of groundbreaking Carthage faculty member **Charlotte Chell**, decades of colleagues are warmed by the memories of a woman whose passion and influence stretched from the sciences to the arts.

The professor emerita of mathematics and computer science passed away Dec. 28. She was 80.

“Charlotte Chell was one of Carthage’s great builders,” said President John Swallow. “We are deeply in her debt, for all that she accomplished and for all that she inspires us to do. Her life will be long admired by all who were fortunate enough to know her.”

After teaching at Carthage from 1975 to 1977, Prof. Chell returned in 1981 and continued full-time until retiring in 2013. With a primary appointment in mathematics, she became the first woman to serve as Governor of the Wisconsin Section of the Mathematical Association of America.

“She was an amazing person and a brilliant mathematician,” said Professor Mark Snavely, chair of the Mathematics Department, whose office is one of two on campus named for her. “I learned how to do mathematics in graduate school, but Charlotte taught me how to find mathematics everywhere around me — in board games, earrings, coffee makers, even Christmas tree lights!”

Largely self-taught in the emerging field of computer science, she launched the precursor to today’s computer science program in 1984. Prof. Chell later taught courses in the Great Ideas program and produced the College’s Christmas Festival for 26 years.

“Loving both mathematics and music, Charlotte also knew how to lead,” said President Emeritus F. Gregory Campbell. “She created an eminent natural sciences division and turned a small Christmas concert into what remains the crown jewel of Carthage culture. All the while, ignoring her own physical infirmities, she demanded far more of herself than of anyone else.”

Prof. Chell won Carthage’s Distinguished Teaching Award in 1987-88 and the Wisconsin Section Distinguished Teaching Award in 2000. As a department and division chair, she recruited other top faculty members and secured long-term funding for hands-on research. In 2010, Prof. Chell became only the second active faculty member to receive the Carthage Flame — the College’s highest honor

“Charlotte was a ground-breaker in many respects and was a successful champion of her passions during a key time in our history,” said Professor Deanna Byrnes, dean of the Division of Natural and Social Sciences. “All of us at Carthage continue to benefit from her incredible energy, her generous and tenacious spirit, and the investments she made for our future.”

After seeing Prof. Chell’s ardent support for women in the sciences up close, Sara Jensen ’08 is determined to pay it forward. Now an associate professor of mathematics at her alma mater, she recalls a conversation she had with the pioneering faculty member as a Carthage student.

When Prof. Chell mentioned that she had to sign graduate school papers “C. Chell” to circumvent the rampant gender bias of that era, the undergraduate wondered aloud if she should follow suit. “Absolutely not!” Prof. Chell responded. “I did what I did so you wouldn’t have to.”

Prof. Chell’s surviving relatives include her husband, Sam, a professor emeritus of English who taught at Carthage from 1968 to 2007, and two adult children.

Campus News

Beloit College

By Ben Stucky

The late **Ranjan Roy** was promoted to Emeritus Professor of Mathematics and Computer Science in the Fall of 2020.

Ben Stucky joined the department as an Assistant Professor of Mathematics in the Fall of 2020. He received his Ph.D. in Mathematics from the University of Oklahoma in May 2019.

Student **Phuc "Jerry" Ngo** was accepted to present at the National Conference on Undergraduate Research in April.

The Department of Mathematics and Computer Science is thrilled to administer the new Data Science and Data Analytics programs. We look forward to welcoming our first DS/DA majors.

Cardinal Stritch University

By Sr. Barbara Reynolds

Cardinal Stritch University has been going through a lot of re-organization recently. We have re-organized from four colleges to three and have consolidated many departments. As I started to write this note, I realized that I was not sure exactly what department I'm associated with at this time. I searched our university website and learned that I am now designated as Mathematics Faculty in the Science and Math Department, which is in the College of Undergraduate Studies; a year ago I was in the Mathematics and Computer Science Department in the College of Arts and Sciences. The Science and Math department is chaired by **Dan Meer** who is a faculty member in Biology. In addition to restructuring on the administrative side, we have reorganized our "majors" into "concentrations." This gives students more flexibility in putting together a program that fits their interests and goals. Our relatively traditional major in Mathematics is composed of two concentrations (unimaginatively named Mathematics I and Mathematics II). Our computer science courses have been organized around three concentrations: Basic Computer Science, Data Science, and Databases and Information Systems. Within this new structure, students have the possibility of creating their own major (with faculty guidance) by putting together several concentrations.

This reorganization has been going on through the pandemic, which has brought its own challenges. In mid-March we pivoted rather abruptly (as did the whole world) from teaching face-to-face in the classroom, to teaching online using a variety of synchronous and asynchronous styles. I chose to teach synchronously, meaning that I taught at the same time as the class was originally scheduled (Milwaukee time), just meeting the students online instead of in the classroom. However, we have a fairly large proportion of international students, and at one point I realized that I was teaching across 9 time zones – from California in the west to Israel in the east. The most challenging time-zone spread I faced was a late afternoon class with three students in Europe, so that late afternoon in Milwaukee was around midnight in Germany, Switzerland, and Poland. I've been challenged and I've learned a lot about teaching, and about myself, in this environment. I'm becoming more creative and flexible as a teacher, while still holding students to high standards.

When we reopened in late August, about 80% of our traditional undergraduates were meeting face-to-face in larger spaces where students can be spread out. Because I like to use small groups, I chose to meet my classes online where I've been experimenting with using zoom breakout rooms for small group work. I continue to experiment and to learn ways to make this kind of teaching effective for learning. As we start this spring semester, I am still teaching online while many of my colleagues are teaching face-to-face in conference-room-size spaces. We are all hopeful that we can be back together on campus for the fall 2021 semester. And yet, I realize that I may continue some teaching strategies and classroom policies that I've developed in this crazy online environment. I will focus the rest of this news update on faculty in Mathematics and Computer Science.

Suzanne Caulfield is teaching a mixture of under-division and upper-division mathematics courses, some face-to-face in a large classroom, and some asynchronously online.

Mika Moteki teaches a broad range of 100-level courses and coordinates the integrated algebra support lab for students who require remediation in order to be successful in Intermediate Algebra.

Carl Mueller serves as Associate Dean of the College of Undergraduate Studies. In this capacity he is able to teach about one Mathematics course a year.

Alex Pezewski teaches Computer Science courses while developing concentrations in Data Science and Database & Information Systems Sciences.

Sr. Barbara Reynolds: This is my 42nd year in the department; this semester I'm teaching Calculus II, Theory of Probability & Statistics, and the capstone Seminar for CS and MT majors. **Bill Fenton** (Bellarmine University, Louisville, KY) and I have recently completed a new textbook, College Geometry with GeoGebra, available now from Wiley.

Carthage College

By Mark Snavely

Charlotte Chell, Professor Emeritus of Mathematics at Carthage College, passed away December 28, 2020, after a lengthy illness. See memorial in this newsletter.

UW-Eau Claire (Eau Claire Campus)

By aBa Mbirika

In January 2021, we sent 3 research students and 3 of our faculty to present and attend the virtual Joint Mathematics Meeting. Student **Heather Baranek** presented a poster with title "The Game of Cycles: Extended". Student **Tyler Gonzales** gave two talks: one titled "A Tauberian approach to an analog of Weyl's Law for the Kohn Laplacian" and another titled "CR-embeddability of Quotients of the Rossi Sphere via Spectral Theory". Faculty talks were as follows: **Carolyn Otto** and UWEC student **Sydney Dame** on "Topological Theory of Protein Folding with Virtual Knots" and **Daniel Yee** on "Dixmier-Moeglin Equivalence and Morita Invariance". Faculty member **Shanise Walker** co-organized the MAA Contributed Paper Session on the EDGE (Enhancing Diversity in Graduate Education) program: Pure and Applied talks by Women Math Warriors.

The UWEC math department congratulates **Tom Wineinger** on his retirement after 50 years of a long teaching career here. This is well-deserved retirement. We appreciate your service to all the BluGolds in your 50 years here at UWEC! Read an article at this link.

Math Department ADA **Nicole Owen** was elected the University Staff Council Chair in October 2020. Congratulations Nicole!

Allison Beemer and her collaborators **Salman Habib** and **Joerg Kliewer** (New Jersey Institute of Technology) had a paper appear in Advances in Neural Information Processing Systems (NeurIPS 2020) titled "Learning to decode: reinforcement learning for decoding of sparse graph-based channel codes".

Christopher Davis and his students **Eric Anderson** (UWEC graduate), **Jonah Amundsen** (UWEC graduate, now at Michigan State University), and **Dan Guyer** had a paper appear in the Rocky Mountain J. Math. titled "The C-complex clasp number of links".

Christopher Davis and his collaborators **JungHwan Park** (Korea Advanced Institute of Science and Technology) and **Arunima Ray** (Max-Planck-Institut für Mathematik) had a paper accepted in the Transactions of the American Mathematical Society titled "Linear independence of cables in the knot concordance group".

Colleen Duffy had a paper published in the AMS Notices titled "Designing a course connecting mathematics with Latin American cultures".

Michael Howe and his students **Hengzhou Liu** (UWEC graduate, now at University of South Florida-Tampa) and **Michael Vaughn** (UWEC graduate, now at University of Alabama Tuscaloosa) had a paper appear in the Ball State Undergraduate Mathematics Exchange titled "A proof of the equivalence between the

polytabloid bases and Specht polynomials for irreducible representations of the symmetric group".

aBa Mbirika and his students **Austin Goodrich** (UWEC former student and UW-La Crosse graduate) and **Jasmine Nielsen** (UWEC graduate) had a paper accepted in the journal Involve titled "New methods to find patches of invisible lattice points".

Shanise Walker is now on the editorial board for MAA Math Values. The Math Values Blog explores the diverse voices of mathematics and discusses topics related to and affected by mathematics and highlights four broad topics: inclusivity, community, communication, and teaching and learning. If anyone is interested in contributing content, they can contact Dr. Walker at walkersg@uwec.edu or email blogs@math.org.

UW-Milwaukee

*By **Jonah Gaster***

Recent cross-disciplinary work of Visiting Assistant Professor **Brendan Burns Healy** was featured in the January 2021 issue of UWM's InFocus Newsletter. Together with collaborators **Caroline Merighi** and student **Elliott Fairchild**, and with PhD student **Aparna** Deshmukh from Civil and Environmental Engineering Professor **Konstantin Sobolev**'s group, Burns is using tools from geometric group theory to probe geometric configurations of "auxetic meta-materials". Their work could find application to 3D-printing, and the long-term goal of improving durability and decreasing cost for building materials like concrete. This is Dr. Healy's last year with the Department. We wish him well and commend him to whatever lucky department scoops him up next!

Clark Evans was recently promoted to full professor. Professor Evans was featured in December in a CBS 58 News Clip discussing La Nina Winter phenomena. Two of Professor Evans' undergraduate students have won awards in recognition of outstanding research: Alum **Giorgio Sarro** (B.S., 2020) has been awarded the American Meteorological Society's Father James B. Macelwane Award in Meteorology for his work on tropical storms and hurricanes, while senior undergraduate **Anna Kaminski** is a UWM Senior Excellence in Research Award winner for her work on atmospheric rivers.

Thanks to the efforts of Professor **Jeb Willenbring** as a member of the university's ADA Accessibility Advisory Committee, UWM has introduced a new, free app to help those who are blind or visually-impaired navigate campus life. The app, Aira, allows users to reach a remote, trained agent at the touch of a button to help with accessibility issues.

In November 2020 two teams of UWM undergrads competed in the SCUDEM V, a challenge in mathematical modeling with differential equations. **Katelyn Mongerson**, **Olivia Peterson**, and **Carson Radtke** worked on a problem involving the management of different conflict resolution strategies, while **Chinh Nguyen**, **Kathryn Pecha**, and **Abraham Perez** considered a model of a bird perched on a bicycle wheel in a viral video. Each team won a Meritorious award for their submission.

A January WUWM 89.7 Lake Effect news segment titled "Mild Winter In Wisconsin Goes Deeper Than Just Climate Change" featured UWM's very own Distinguished Professor **Paul Roebber**.

L. Ridgway Scott, professor emeritus of Computer Science and Mathematics at the University of Chicago, will deliver the 2021 Marden Lecture in Mathematics at UWM on April 8th at 4pm. He has been the Louis Block Professor since 2001 and published over 180 papers and 5 books related to biophysics, parallel computing, and fundamental computational aspects of structural mechanics, fluid dynamics, nuclear engineering, and computational chemistry. This includes his pioneering work on the finite element method for solving partial differential equations. Information about the Marden Lecture can be found online here. Professor Scott's talk, delivered virtually due to the COVID-19 pandemic, will concern the mathematics of flight simulation.

UW-Oshkosh

By John Beam

In February, 2021, **Ken Price** from the Oshkosh campus and **Carrie Tirel** from the Fox Cities campus, along with Oshkosh academic adviser **Lisa Szromba**, delivered a 60-minute presentation during a 2021 virtual conference of the American Association of Colleges and Universities on "Charting Mathematical Pathways at UWO." The conference theme was General Education, Pedagogy, and Assessment: Embracing the Best Emerging Practices for Quality and Equity.

UW-Platteville

By James Swenson

UW-Platteville has presented the Nimocks Family Faculty Appreciation Award to **Kirthi Premadasa**. Founded by former provost Mittie Nimocks Den Herder, the award "honors and recognizes outstanding faculty at UW-Platteville who teach effectively, teach the value of diversity, teach the ability to argue sensitive issues with competence and civility, create opportunities for students to engage in high-impact practices, and teach the importance of a liberal arts education."

UW-Stout

By Steven Deckelman

Ayub Hossain, the department's senior statistician and frequent attendee of the state MAA meetings has announced his retirement after 33 years in the department, at the end of this semester. Dr. Hossain began his career in the UW System at UW La Crosse.

Andrei Ghenciu, mathematics, statistics and computer science, presented at the Joint Mathematics Meeting on Jan. 6. The talk titled "Iterated Function Systems Associated with Continued Fractions Expansions" was given in the American Mathematical Society special session on quantization for probability distributions and dynamical systems. The annual meeting is the largest for mathematics in the world. It was held virtually this year.

Abraham Smith, along with co-authors **Paul Bindich** and **John Harer** had their paper "Persistent obstruction theory for a model category of measures with applications to data merging" published in the Transactions of the American Mathematical Society.

UW-Whitewater

By Thomas Drucker

Aditi Ghosh had a recent publication accepted jointly with students **Claire Onsager** (Physics and Mathematics major) and **Andrew Mason** (Mathematics and Media Technology major) from UW-W in a top tier interdisciplinary journal PLOSOne in Applied Mathematics. The project involved a novel modeling of hypoxic liver injury which is a liver injury characterized by deprivation of oxygen due to underlying conditions. The students worked on this interdisciplinary project for publication and have also presented their work in local conference.

Ki-Bong Nam (jointly with **Suk-Geun**) published "A Determinant Proof of a Generalized Pythagorean Theorem", The American Mathematical Monthly, Taylor & Francis, 2020.

Thomas Drucker gave a talk at the winter meeting of the Canadian Mathematical Society. It was his first attempt at a virtual lecture, but the size of the crowd was no larger than if it had been in person. The title was 'From Plato to the Jabberwock', and it dealt with the philosophical roots of Lewis Carroll's [Charles Dodgson's] insistence on using Euclid as the basis for geometrical instruction as late as the second half of the nineteenth century. He also gave two talks at the last joint meeting of the AMS and the MAA, originally scheduled for Washington in January but also transformed into virtual sessions. He spoke in the AMS special session on history on the origins of straightedge and compass constructions in Greek mathematics, largely inspired by David Richeson's recent 'Tales of Impossibility' (Princeton, 2019). He also spoke in the Philosophy of Mathematics SIGMAA-sponsored session with the title 'Why Is There a Question About Why There is Philosophy of Mathematics at All?', with reference to Ian Hacking's book 'Why Is There Philosophy of Mathematics at All?'. The latter session was in memory of Reuben Hersh.

MAA-Wisconsin Executive Committee

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