



Fall 2021 Newsletter

<https://www.rockymountain.maa.org/s/fall2021newsletter.pdf>

Section Website: <https://www.rockymountain.maa.org/>

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2021 – 2022 Section Officers and Committee Members

Section Website <https://rockymountain.maa.org>

Current term of service in parentheses; The Chair serves for 4 years – one as Chair Elect, two as Chair, one as Past Chair; All other positions are 1 year terms unless otherwise noted

Section Executive Committee Officers for 2021 – 2022

Chair (2020-2022)	Dan Swenson Black Hills State University Spearfish, SD 57799	daniel.swenson@bhsu.edu 605-642-6425
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MAA National Rep (2020-2023)	Tracii Friedman Colorado Mesa University GrandJunction, CO	tfriedma@coloradomesa.edu 970-248-1667
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Nathaniel Miller, UNC nathaniel.miller@unco.edu

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Section Student Activity Coordinator

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Mandi Schaeffer Fry, MSU Denver

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Public Information Officer and Section Liaison Coordinator

(2020-2023) Mona Mocanasu, MSU Denver

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Website Editor

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Newsletter Editor

(2019-2022) Pam Peters
Pikes Peak Community College

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Chair's Corner

Dear Rocky Mountain Section,
Welcome to the 2021-2022 academic year! I hope that the Fall term is off to a good start for all of you.

I was so pleased to see so many of you at our "virtual" Section meeting this past spring! After such a long time apart, it felt like a rare treat to get to see you all again, even if not in person. And, I wasn't alone in this sentiment: several of you mentioned to me how exciting it was to re-connect with colleagues, and discuss math--and/or the state of the world (academic and otherwise). Spending time together is an important part of what mathematicians do, and for many of us I think the Section meeting is a highlight of the year. I want to thank the many, many people who made that weekend possible. Your contributions are so greatly appreciated! A few people should be highlighted: thank you to our volunteer co-Chairs, Tracii Friedman and Kyle Riley, for their hard work and incredible leadership. Thank you to Ana Berrizbeitia and Kenneth Monks for their work on our Gather.Town virtual meeting area, and thanks especially to Ana for putting together the Amazing Race event. (Ana came up with the idea for the Amazing Race, along with most of the questions--and she also beautifully hand-drew all the question images.) Thank you to our Web Master, Oscar Levin, for handling our many requests and making sure all the information was accurate and accessible. And, thank you to our presenters, thank you to our moderators and organizers, and thank you to everyone who attended.

I also wish to say thank you, and welcome, to the newest member of our Section's Executive Committee! Many of you know Gulden Karakok at the University of Northern Colorado, who is our Section's new Chair-Elect! With Gulden, our Section will be in great hands for years to come. She replaces Alexander Hulpke, who served as our Past Chair in 2020-21. Alexander, thank you very much for your service to the Section, and for sharing your wisdom with me over the past years.

To my colleagues on our Section's Executive Committee (Mona, Tracii, Kenneth, Gulden): it is a true pleasure to serve with you all. And of course, many, many thanks are due to all of our

Section's many committee members and coordinators. As always, thank you so much for all that you do.

Finally, a special thank you to Pam Peters for her continued excellent work on this Newsletter. Being a part of this Section has in many ways shaped my career as a mathematician, and my love for math and teaching. To all of my colleagues in the Section, it is an honor to be one of you, and I look forward to chatting, learning, and working and with you all over the coming year.

Dan Swenson
Black Hills State University
Chair, Rocky Mountain Section
Mathematical Association of America

Congressional Representative Report

The MAA Congress met August 2 and 3rd for two and a half hours each day via Zoom. The focus of Day 1 was on how the MAA can create a more inclusive environment. Rick Cleary, AIMS Co-Chair and Jenny Quinn, MAA President and AIMS Co-Chair, led us in a discussion of the recently approved *MAA Code of Conduct*. It was developed by the AIMS Task Force with the intention of supporting our collective commitment to a welcoming and inclusive community. I encourage you to read the entire document available here: [MAA Code of Conduct](#).

Edray Goins, Section Representative, and April Ström, MAA Vice-President, facilitated a discussion on "Widening MAA Membership." They suggested focusing on increasing membership from four sub-groups: R1 institutions, HBCU's, Community Colleges, and High Schools. Finally, Francis Su, AMS Vice-President, discussed with us the AMS Report: [Towards a Fully Inclusive Mathematics Profession](#).

In summary of these sessions, we must understand our history as a mathematics community of discrimination and marginalization of underrepresented people. As described in the *MAA Code of Conduct*, "It is not enough for us to simply modify our own behavior and "do our best" as individuals. Rather, if we are to live our values, we must pursue collective effort to speak against attitudes and behavior that

continue to harm less-privileged members of our profession and our society. To do less is to diminish ourselves and our profession.” We must also actively seek out and create opportunities for underrepresented groups to participate fully in the mathematics community. During Day 2’s meeting, MAA President, Jenny Quinn, (in her Presidential Update) described 2021 as a transformational year for the MAA and its members. We have changed the way we meet, how we offer programming, the way we teach, etc. and now we must begin to decide what worked and should continue. Virtual programming and meetings, while clearly not the same as “in-person,” do permit participation by folks who are too far away or have no funding to travel. This and similar issues will need to be carefully considered as we move forward. MAA Executive Director, Michael Pearson he reported on the latest draft of the MAA Strategic Plan. Some key goals include: continuing to “curate and develop” the robust array of MAA programs; to “increase awareness and understanding of mathematics” and its impact on our world; and to “expand and increase membership among core and new audience groups.” Additional goals are largely centered on the business and financial aspects the organization.

If you have any questions or input that you would like me to share with the MAA, please don’t hesitate to reach out:

Tracii Friedman
 Colorado Mesa University
 Representative, Rocky Mountain
 Section
tfriedma@coloradomesa.edu



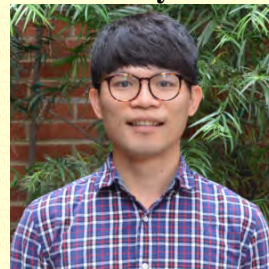
John Griesmer joins Mines as a Teaching Assistant Professor this year, having served here as an adjunct from 2016 to 2021. After earning his PhD in Mathematics from The Ohio State University in 2009, he was a postdoctoral researcher at the University of British Columbia and a lecturer at the University of Denver. John enjoys teaching all levels of undergraduate mathematics, especially real analysis, numerical analysis, and the calculus sequence. His research interests include ergodic theory, additive combinatorics, and harmonic analysis.

Daisy Philtron
Teaching Assistant Professor
PhD Pennsylvania State University



Daisy Philtron is a statistician trained at the Pennsylvania State University where she was an assistant research professor for five years before joining the Mines faculty. Her interests include statistical consulting, statistical education, and the Bayesian modeling of genetic data.

Samy Wu Fung
Assistant Professor
PhD Emory University



Prior to joining Mines, Samy Wu Fung was an Assistant Adjunct Professor in the Department of Mathematics at UCLA. He received his PhD in

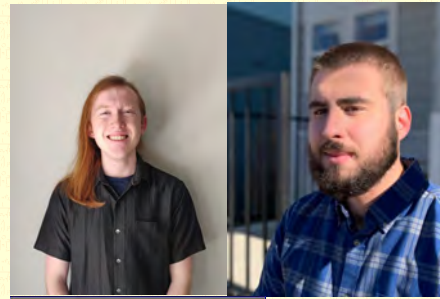
Section News

Colorado School of Mines

NEW Faculty Members
 The Mines’ Applied Mathematics and Statistics department is happy to introduce and welcome our new colleagues.

John Griesmer
Teaching Assistant Professor
PhD The Ohio State University

applied mathematics from Emory University in 2019, where he worked under the guidance of Lars Ruthotto. His research interests lie in the intersection of applied mathematics and data science. In particular, he is interested in inverse problems, optimization, optimal control, and deep learning.



STUDENT AWARDS

We want to extend our congratulations to the winners of the following student awards from spring 2021.

Victoria (Tori) Marbois (Computational & Applied Mathematics) and **Meera Duggal (Statistics)** received the Outstanding Graduating Senior Award. The Outstanding Graduating Senior Awards recognize academic excellence and service to the department, university and community.



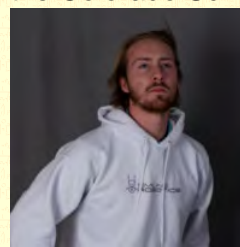
Victoria (Tori) Marbois the E-days Engineer Award. This award is given to one senior from each department who truly exemplified what it means to be a committed student, an outstanding Oredigger, and a valuable member of the Mines community.



Meera Dugal received the Ryan Sayers Memorial Award. The Ryan Sayers Memorial Award recognizes the outstanding academic achievements of a graduating student, majoring in engineering physics and/or applied mathematics and statistics, who has performed significant undergraduate research.



Christian Prather received the AMS Honors Fund to Honor Excellence in Teaching and Learning Award. This award recognizes and honors Carol Job and Sharon McAuliffe, both of whom put a tremendous amount of effort into supporting students who struggled in their initial coursework or student life at Mines and ultimately became successful students due to the effort and attention of caring faculty. Recipients of this award are recognized for their ability to persevere through personal and/or academic adversity and ultimately succeed at the Colorado School of Mines.



Nathaniel Craig, Benjamin Krawciw, and Griffin Hampton received the Ryan Sayers Memorial Scholarship. The Ryan Sayers Memorial Award recognizes the outstanding academic achievements of a graduating student, majoring in engineering physics and/or applied mathematics and statistics, who has performed significant undergraduate research.

James (Kael) Kleckner was the recipient of the 2020 Professor Everett Award in Mathematics. The Award is given to a senior who demonstrates scholarship, leadership, community service and potential for the innovative application of mathematics to mineral engineering.



Karin Leiderman Gregg, Associate Professor of Applied Mathematics and Statistics, was awarded the Faculty Excellence Award. This award recognizes a tenured or tenure-track faculty member at Mines for significant and meritorious achievement in teaching and scholarship.



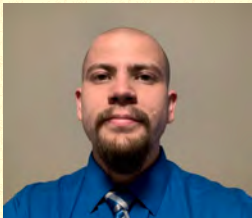
AMS Graduate Teaching Fellow **Justin Garrish** is the recipient of the Graduate Teaching Award that is given annually to the graduate student who has shown the greatest effectiveness as a teacher of undergraduate mathematics or statistics courses.



Stephen Pankavich, Associate Professor of Applied Mathematics and Statistics, was awarded the W.M. Keck Graduate Mentorship Award for his mentorship of graduate students and his instrumental role in creating a strong and inclusive community of AMS graduate students.



Brandon Reyes was the 2020 recipient of the Graduate Research Award that is presented annually to a graduate student for excellence in research prior to the completion of their PhD thesis, recognizing the research's original contribution to knowledge in the field and/or the student's exceptional collaboration with a research team.



Teaching Professor **Deb Carney**, Teaching Associate Professor **Mike Mikucki**, and Teaching Professor **Mike Nicholas** were awarded the W.M. Keck Faculty Mentorship Award for their creation of the AMS Professional Learning Community.



FACULTY AWARDS

The Mines' AMS department is proud of their award-winning faculty and staff:

FACULTY GRANTS

The Applied Mathematics and Statistics Department is home to many successful research programs. We congratulate those faculty members who were awarded grants in 2021.

- Cecilia Diniz Behn: Lumos Tech Inc. grant entitled "Sleep Restoration-Circadian Approach"
- Mahadevan Ganesh: Simons Foundation grant entitled "Novel Wave Propagation Models : Formulations, Algorithms, Analysis, and Simulation"
- Karin Leiderman: Novo Nordisk A/S grant entitled "Evaluation of concizumab under variations of clotting factors and other plasma proteins using a mathematical model of flow-mediated coagulation"
- Steve Pankavich: NSF grant entitled "Analytical and Numerical Problems in Collisionless Kinetic Theory"
- Jennifer Ryan: NSF grant entitled "Development of Geometrically-Flexible Physics-Based Convolution Kernels"
Rebecca Swanson,
Colorado School of Mines

South Dakota School of Mines and Technology

There are many new and exciting things going on at the South Dakota School of Mines and Technology. Our Provost was able to convince Travis Kowalski to become our permanent Head, which means he is no longer an interim Head. Deborah Bienert retired last spring with the added recognition of being honored with the Guy March Award at May Commencement along with her husband. The Guy March Award is in honor of Guy March who was a Professor of Mathematics at our university that founded our Alumni Association. The award is meant to recognize alumni that continue to perpetuate positive interactions with the institution, the students, and the alumni. We have two new full-time hires that start this fall, Erin Handberg and Jeffrey Winter. Mr. Winter is the founding director of our new mathematics help center that we have named the "Slide Rule".

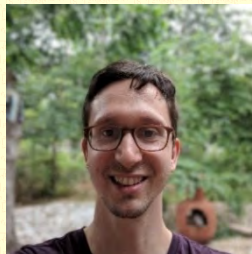


The university is hiring tutors and we are currently building a brand new space in the library to house the center. Dr. Kowalski also created a logo for the center, above. The department is also launching a new course this fall to replace the old offering we have in College Algebra. The goal of this new course is to take students that enter at the college algebra level and work to get them Calculus ready in just one semester. Students in this super charged Precalculus class will be a primary customer for the new Slide Rule center and vision is this extra support can promote student success and improve retention. Lastly, the enrollment numbers in the major are higher than what we have seen in twenty years, which is a great source of excitement!

Kyle Riley, SDSMT

Montana State University

The Montana State University Department of Mathematical Sciences is pleased to welcome Dr. Sam Gunningham to our faculty as an Assistant Professor in Mathematics.



Dr. Gunningham's work is broadly in the field of Geometric Representation Theory. His research utilizes ideas and tools from all over geometry, topology, mathematical physics, and related areas. Many of the phenomena he is interested in can be understood through the lens of topological field theory (TFT). In physics, TFTs arise when you consider a quantum field theory such that there is no dependence of the spacetime metric (often this will require some "twist" or limit of the original theory). Mathematically, a TFT may be understood as a certain gadget that assigns numerical and linear algebraic data to manifolds (i.e. pieces of spacetime). Deep and mysterious dualities predicted by physics (in particular, by string theory) thus give rise to concrete mathematical

predictions which can (hopefully!) be precisely formulated and proved. A rich example of this phenomenon is the (geometric) Langlands program. This program has its origins in number theory, in particular the theory of modular and automorphic forms; physically, it corresponds to so-called S-duality in 4d $N=4$ super Yang-Mills. The space of states of this theory on a 3-dimensional spacetime slice is closely related to the skein module: a vector space built out of all possible knots and links modulo certain "skein relations". One long-term research goal is to understand how Langlands duality manifests itself in terms of knots and links in 3-manifolds.



The Department of Mathematical Sciences at Montana State University is proud to announce that Dr. Stacey Hancock has been granted tenure and promoted to Associate Professor of Statistics. Dr. Hancock's research interests lie in statistics and data science education. Research projects in this area include: how students use metaphors and metonymies when learning statistical concepts related to sampling distributions and informal statistical inference, how learning and attitudes towards statistics are affected by one's peers in a flipped-format classroom, and developing and defining data science curricula at the undergraduate and graduate level. She is also involved in an NSF grant to bring computer science to rural and American Indian middle school students in Montana through storytelling. Additional research areas include time series analysis, specifically, change-point detection, and statistical applications in ecology.



The Department of Mathematical Sciences at Montana State University is also pleased to share that Dr. Tianyu Zhang has been promoted to the rank of Professor of Mathematics. Dr. Zhang's research interest includes numerical analysis, modeling and simulation of biofilm-related phenomenon, computational fluid dynamics, and data analysis. His current research projects include mathematical modeling of metabolic activity in chronic polymicrobial communities, role of dynamic microbiome in Cystic Fibrosis lung disease, constraint-based approach to model metabolic pathway selection in a multi-species syntrophic network, modeling and time series analysis of data collected in the waste water treatment plants using activated sludge, and modeling the bio-electrochemical denitrification process in wastewater treatment. His current project, modeling the dynamic microbiome contribution to Cystic Fibrosis lung disease in collaboration with a microbiologist Robert Quinn at Michigan State University, is funded by an NIH-R01 grant. His teaching interest includes courses related to numerical solution of differential equations (finite difference and finite element methods).

Beth Burroughs, MSU

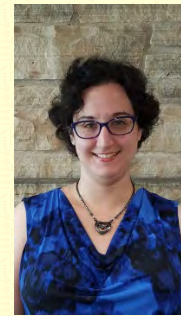
Colorado State University - Pueblo

Four of our long-term Lecturers received a well-deserved promotion to Senior Lecturer this year – congratulations to Diana Maal, Bill Sargent, Julie Spangler and Tammy Watkins!

Bruce Lundberg is welcomed back this fall from a year-long sabbatical leave during which he developed stronger methods for solving multi-vehicle trajectory optimization problems at The Aerospace Corporation's Trajectory Design and Optimization Department. He also served as one of two CSU-Pueblo Daniels Fund Ethics Initiative "Champions" for 2020-21. In addition to four technical papers in computational optimization and control, Bruce published two interdisciplinary papers on ethics in mathematics, technology and social media, including "The Virtues of Leonhard Euler: Ethics, Mathematics and Thriving in a Digital Era" which appears in the Journal of Interdisciplinary Studies.

Jim Louisell is on sabbatical leave this year, and we look forward to celebrating his

accomplishments next fall. Meantime, two of our recently retired faculty remain active, with Frank Zizza continuing to teach our Matrix and Vector Algebra course each semester and Janet Barnett beginning to wrap up the NSF-funded TRansforming Instruction in Undergraduate Mathematics via Primary Historical Sources (TRIUMPHS) project. Janet Nichols is now in her 45th year of teaching at CSU Pueblo, and shows no signs of slowing down yet!



Our former admin assistant Joleen Ryan moved into a position in the college dean's office, and we were pleased to welcome Kristal Wood as her replacement. Our college also now has a new name (Science, Technology, Engineering and Mathematics), along with some new programs, due to a recent campus-wide restructuring. Mathematics and Physics continues to be a joint department within STEM, and hopes to hire a new Chair this year – interested individuals should watch for that job announcement to come soon! Many thanks to our current chair Paul Chacon who has served us long and well, during good times and bad.

Janet Barnett, CSU-P

University of Northern Colorado

We are excited to welcome Dr. Elizabeth Kersey to her new position of instructor (contract renewable). Dr. Kersey received her Ph.D. in Mathematics Education from Purdue University and her research interests are gender in STEM education, particularly transgender issues; feminism, queer theory, and other critical perspectives; equity; equity in mathematics curricula; philosophy and history of mathematics; sociological perspectives on mathematics and mathematics education. Dr. Kersey previously worked as a post-doctoral research associate for the Math and Science Teaching (MAST) Institute at UNCO and also taught courses for our department for the Master's program, the elementary education sequence, and the Calculus sequence. Dr. Kersey will be coordinating MATH 131/132 this Fall.

Dr. Lindsay Reiten received funding from the United Way of Weld County for her partnership project with a local community center to engage late elementary and middle school students in STEM activities, particularly mathematics. This endeavor aims to address the lack of opportunities many students from marginalized communities face as they are kept out of advanced math courses. After school activities aim to develop problem solving skills and improve number sense. Dr. Reiten is also invited to be on a panel for the 2021 Colorado Council of Teachers of Mathematics (CCTM) annual conference that will be held virtually from September 29th -October 2nd.

Dr. Nathaniel Miller has been leading an online working group dedicated to improving Geometry for Teachers (GeT) courses as part of the [GeT: a Pencil community](#) organized through an NSF grant at the University of Michigan. His group is comprised of mathematicians and math educators from across the U.S., and is working on developing a set of Essential Student Learning Objectives that should be addressed in any GeT course.

Dr. Robert Powers is piloting the [MODULE\(S\)²](#) project Statistics materials at UNC during the 2021-2022 academic year. The goal of the project is to create course materials that provide opportunities for prospective teachers to develop mathematical knowledge as it relates specifically to the work of teaching.

Our graduate teaching assistant team with new members met with course coordinators and graduate program coordinators to discuss their teaching practices prior to start of the semester.



From left to right standing: Alphonse Nde Nembot, Adam Ruff, Dr. Virgil Pierce, Wesley Martsching, Evan Czysz, Sarah Sparks, Abigail Griffin, Dr. Katie Morrison, Sam Waters, Michael Oduro, Theophilus Acquah. From left to right sitting: Dr. Elizabeth Kersey, Lida Bentz, Dr. Nate Eldredge.

Gulden Karakok, UNC

Red Rocks Community College

Red Rocks Community College (RRCC) continues to implement python into our Calculus sequence and Differential Equations to provide modern and relevant experiences to students. We utilize two in-house servers the mathematics department has for students to engage with Jupyter notebooks. Since it is housed on a server, it is all web based and students can access it from any classroom and from home. This allows all of our classrooms to be high powered computer labs. Students either work on their own laptop or grab one from our laptop carts that can be delivered on whatever classroom dates we need. We also are currently building a Data Science program, with courses such as Machine Learning (where we can train on our servers), The Ethics of Data, and other Data courses that will help students learn how to manage and analyze big data sets. This will be built into a two year degree that we hope to dovetail into what our four year neighbors are offering so students can transfer seamlessly into a four year degree, much like they do with our mathematics degrees. This is all in addition to our work throughout the pandemic to offer modalities to support students. We now have remote courses in addition to our traditional face to face and online courses. To better support our remote courses, our department purchased an entire fleet of Wacom Ones and uses Xournal OER software to better deliver content. RRCC also continues to help other schools within CCCS begin using WeBWork as CCCS has a grant and capability to host WeBWork for any CCCS institution that wants access to it. We share content with any institution that is

interested and we help train faculty and instructors within CCCS that are new to WeBWork.

Brenda Forland, RRCC

Western Colorado University

Western Colorado University's mathematics program has moved into the brand new Rady building on campus. The Rady building was established through a 90 million dollar donation from Paul Rady. The building is a modern design with state-of-the-art facilities. We are excited to share the space with computer science and a new partnership program with the University of Colorado for engineering and computer science. The partnership is producing record enrollment in our calculus classes, and we are excited to share mathematics with a broader audience. We are optimistic and looking forward to hosting an RMS MAA event in the future!

Jeremy Muskat, Western Colorado University

Pikes Peak Community College

PPCC is happy to welcome Lane Garrett, Pamela duMaine, and William Kuhn to our Math full-time faculty. Lane Garrett: Since January of 2020, Lane has been a PPCC part-time instructor. He has taught Quantitative Literacy, Calculus I, Mathematics for Liberal Arts, and Introduction to Statistics. Prior to coming to PPCC, Lane served as a tutor and an instructor in a wide range of mathematics courses at Texas A&M University in Corpus Christi, and at Temple College. Lane has a BS and MS in Mathematics from Texas A&M University. Pam duMaine: Pam has been teaching mathematics at James Irwin Charter School since 2019, including several PPCC concurrent enrollment classes. Prior to this, Pam taught a variety of math courses at several schools including MSU, The Academy of Charter Schools, FRCC, and CCD. Pam has a BS in Mathematics from Metro State, an MS in Curriculum and Instruction from Colorado Christian University, and additional graduate work in mathematics from UNC. Bill Kuhn: Bill brings a wealth of teaching experience to the division. Since 2017, Bill has served as a PPCC part-time instructor, teaching Math for Liberal Arts, College Algebra, Integrated Math II, Introduction to Statistics, and

Calculus I at PPCC and at Sierra High School. Previously, he taught math at CTU and Colorado Springs Early Colleges, and he taught AP Math and Physics for many years at Hebron High School in Carrollton, Texas. Bill earned his BS in Biology from the University of Texas at El Paso, and his MA in Mathematics from the University of Houston.

PPCC has also been very active in moving forward with co-requisite courses. In Fall 2019, PPCC piloted 4 corequisite courses: MAT 103/083, MAT 107/087, MAT 120/080, and MAT 135/085. Our throughput data shows the highest number of students since fall 2014 completed their math requirements within one semester using these linked co-requisite courses. This semester, we expanded the corequisite offering, adding MAT 112/091 and MAT

155/092. We are also implementing significant changes to promote student success, such as:

- Hired a Corequisite case manager to lead early intervention for struggling students and closely collaborate with course leads and instructors
- Staffed all paired sections with the same instructors
- Piloted cross-listed course pairs which use a single D2L shell
Doug Roth and Ivana Seligova, PPCC

Is news from your school missing?

Send your news to your department liaison now with a request to forward it to the Pam Peters, Newsletter Editor for inclusion in the next issue. pam.peters@ppcc.edu

RM MAA Awards

One of the major components of our mission for the section is to recognize outstanding contributions in teaching. We have two teaching awards: the Burton W. Jones Distinguished Teaching Award; and the Early Career Teaching Award. Both awards currently involve a cash award along with a physical plaque, but the true reward is the recognition for the outstanding performance in teaching. I know we have a large population of section members that are deserving candidates for a teaching award. Moreover, earning a regional teaching award is a great way to draw the attention of: administrators, prospective students, current students, alumni, and other important stakeholders to your department. I have recently been appointed to the position of Section Awards Coordinator and the primary focus I have this year is to encourage people to nominate a colleague and help promote the outstanding work our section members do every year. You can find details on the application process on the website at <https://www.rockymountain.maa.org/awards>. There are two dates to keep in mind: December 15 (you need to submit the nomination form); and January 15 (the deadline for the full nomination packet). I am not certain of the origins to our two-step process, but submission of the nomination form is a very simple step that involves emailing a completed form to me. It is true that the nomination packet is more work, but today I want to focus on step 1 and getting you to send in a completed nomination form to me. Fill out that form and take the first step to getting a colleague the respected recognition they deserve! Please contact me if you have any questions.

Kyle Riley
Section Award Coordinator
Kyle.Riley@sdsmt.edu

Mark Your Calendars!

**Submissions to the SP22 Newsletter are due 28 January 2022.
Contact Pam Peters, pam.peters@ppcc.edu if questions.**

The 2022 Rocky Mountain Section Meeting

April 8 - 9, 2022

Metropolitan State University, Denver

The conference website will be available in early March with details on the meeting schedule, how to submit an abstract, and how to register for the meeting. Please be sure to check your email or MAA Connect for the latest conference updates.

Questions can be directed to any of the Program Chairs.

Respectfully submitted,

Dr. Mona Mocanasu

(mmocanas@msudenver.edu)

Dr. John Ethier

(jethier@msudenver.edu)

Dr. Lindsay Packer

(lpacker@msudenver.edu)

The 2021 Rocky Mountain Virtual Section Meeting

April 16 - 17, 2021

The Rocky Mountain Section of the MAA held its first ever virtual meeting on April 16-17, 2021. This virtual format was implemented due to continued restrictions caused by the COVID-19 pandemic. The meeting organizers were Tracii Friedman and Kyle Riley. The more than 150 participants included students, university faculty, K-12 educators and representatives from business and industry. Special thanks goes to Hawkes Learning for their sponsorship and support of the virtual format.

The meeting opened Friday afternoon with a welcome message from Dan Swenson, RMS Chair followed by a Plenary Talk given by Travis Kowalski, the 2019 Burton W. Jones Distinguished Teacher Award Winner, who gave the opening keynote address: 'The Sine of a Single Degree'.

In addition to a General Session, there was a Student Paper Session and a unique "Flipped Conference" Panel Session for which speakers submitted a recorded presentation ahead of the conference. Conference participants could view the presentations ahead of time and then participate in a panel discussion with the presenters during the conference.

The Student Session was kicked off by the 2020 Early Career Teaching Award Winner, Molly Moran, who presented 'Trip Matrices and Torus Knots.' Friday's activities concluded with a virtual social hour and "The Amazing Math Race," both hosted on Gather.town. Saturday's program included a Plenary talk by Carol Schumacher, 'Art Forgery, Differential Equations and the Swindling of Hermann Goring.'

Paper sessions continued on Saturday with the addition of a History of Mathematics session and a Panel Session to promote the Four Corners COMMunity for Mathematics Inquiry in Teaching (COMMIT). There were 33 presentations including 7 given by students.

The conference concluded with an invited presentation by Shelby Stanhope 'Bringing Multivariable Calculus to Life: Enhancing Student Conceptual Understanding Using 3-D Printed Objects, CalcPlot3D Visualizations, and Experiential Learning Field Trip.'

Tracii Friedman

tfriedma@coloradomesa.edu

Kyle Riley

Kyle.Riley@sdsmt.edu

Colorado Council of Teachers of Mathematics (CCTM) Updates

The 2021 Colorado Council of Teachers of Mathematics (CCTM) annual conference will be held **virtually** from **September 29 to October 2nd**. For the schedule of events, please visit [the conference website](#).

Here are some highlights and important dates to note:

- The keynote speaker of the conference is NCTM President-Elect [Kevin Dykema](#) and his talk will be on Saturday, October 2nd.
- There will be a National Panel discussion on Wednesday, September 29th from 6:30pm-8:00pm with [Dr. Zandra de Araujo](#), [Dr. Marian Dingle](#), [José Luis Vilson](#), and [Dr. Theresa Wills](#).

Visit CCTM's [new website](#) and renew your membership, which is now separate from annual conference registration. You can become a member or renew it any time.

Consider submitting an article to the Colorado Mathematics Teacher Journal (CCTM's peer-reviewed, open access journal). It has been hosted by the University of Northern Colorado Libraries:

<https://digscholarship.unco.edu/cmt/>

Gulden Karakok, UNCO
MAA Representative on CCTM Board of Directors

Nominations for Section Chair Person Elect

The nominating committee is soliciting nominations for our election in Spring 22 of Vice-Chair. The Vice-Chair serves a two-year term, and must be associated with a two-year school. Nominations can be sent to any member of the nominating committee. This leadership position is vital to the organization and operation of the MAA Rocky Mountain Section. Nominations can be sent to John Carter, nominating committee chair, at jcarte11@msudenver.edu Self-nominations are encouraged.

Details of the duties for this position are described in the Section Procedures Handbook: sections.maa.org/rockymt/SectionProceduresHandbook.pdf.

Note: Elected officers of the section must be members of the MAA.

Respectfully submitted,
The Nominating Committee

Pikes Peak Regional Undergraduate Mathematics Conference (PPRUMC)

The **18th PPRUMC** was **virtually hosted by Colorado College on Saturday, February 27, 2021**. Although we were disappointed that we were unable to see each other in person, this year's event attracted 53 participants from 13 different schools for a wonderful day of mathematics.

Dr. Kenneth M Monks (FRCC – Boulder Campus) opened Saturday's program with his Keynote Address *Simple Stupid Examples: They're All We've Got*. His enthusiastic and interactive presentation set the tone for the remainder of this one-day conference, which also featured 9 contributed talks presented by a total of 13 undergraduate mathematics students. A complete list of presenters and their talk titles appears below.

The program also included a panel presentation, *What you can do with a math degree*, featuring panelists Tyler Bongers (Harvard University professor), Rachel Eaton (cybersecurity), and Amy Hepner (data scientist). A fun and lively post-lunch Kahoots! quiz rounded off the day, providing participants with a chance to socialize while comparing their knowledge of the History of Mathematics. The student winners were Arianna McCarty (FRCC), Khaled Allen (CU Boulder), Emerson Worrell (CC), each of whom received a book provided by the RMS.

The PPRUMC Steering Committee is grateful to the local organizing committee Molly Moran (CC) and Beth Malmskog (CC), and to the Colorado College Department of Mathematics for sponsoring Dr. Monk's Keynote Address. Special thanks also go out to all the faculty who contributed their time and expertise to preparing student presenters, recruiting student participants and moderating sessions.

Speaking of encouraging students to present at PPRUMC, now's the time to start looking ahead to the 19th Annual PPRUMC in 2022! Although details for next year are not yet available, the event is typically held on the last Saturday in February (plus or minus a week) on the campus of a host institution in the greater Pikes Peak region. The focus of this one-day conference is to give undergraduate mathematics students an opportunity to present their work in a professional, supportive setting. Presentation topics could include the results of classroom or independent study, as well as REU or other research projects, with both research and expository topics related to mathematics, history of mathematics or mathematics all welcome.

PPRUMC 2021 Contributed Presentations

- Khaled Allen (CU-Boulder), *Quantum Game Theory: A Simple Zero Sum Quantum Game*
- Dylan Small Anderson and Catherine Brennan (CU-Boulder), *A Comparison of Gerrymandering Potential Within Single and Multi-Member Districting Plans for Colorado State Senate*
- Abigail Ezell (CC), *Evaluating Competitiveness Measures for Colorado's Congressional and Legislative Districts*
- Thomas Galligani (USAFA), *Training a Troll-Hunter*
- Van Hovenga (UCCS) and Edith Lee (U. Rochester), *Quasi-stationary Distribution of the Invasion Model of Bipartite Graphs*
- Ben Kazules (USAFA), *Counting Roots of a Family of Harmonic Polynomials*
- Carter Kruse and Arianna McCarty (FRCC), *Fibonacci Boundary Value Problem*
- Emelia McLaughlin and Julie Trimber (USAFA), *How many chicken nuggets can I not buy?*
- Haoru Yang (CC), *The Least Squares Equation and the Second Derivative Test*

Section NExT-RM

Section NExT-RM is a faculty development program for new faculty in the mathematical sciences in the Rocky Mountain region. Section NExT-RM is open to non-tenured faculty members (including masters-holding faculty and those not on a tenure-track) in the Rocky Mountain Section who are within the first five years of teaching at a university, four-year college, or two-year college within the Rocky Mountain Section of the MAA. If any of your department's faculty meet this criteria, we hope you will encourage them to apply!

What is Section NExT-RM?

The Rocky Mountain Section of the New Experiences in Teaching program (NExT- RM) is a smaller scale version of the national Project NExT program serving the members of the Rocky Mountain Section of the MAA. The goals of Section NExT-RM are to support faculty in the first five years of their academic career and to establish links among faculty in the section.

Who is eligible?

Section NExT-RM is open to non-tenured faculty members in the Rocky Mountain Section who are within the first five years of teaching at a university, four-year college, or two-year college within the Rocky Mountain Section of the MAA.

What are my expectations as a fellow?

Section NExT-RM Fellows will remain in contact with one another via an electronic network, and are expected to attend the Rocky Mountain MAA Section meeting. In particular, they will take part in the planning of some of the Section NExT-RM sessions.

Does this cost me anything?

Section NExT-RM is a selective professional development program—an application is required. We will provide the fellows with lunch on Friday and Saturday of the work-shop, and expect fellows to obtain travel and the remaining funding (approximately \$150 for one night's hotel, registration, and banquet) from their departments or other sources.

The 2020 Section NExT-RM cohort was postponed due to the COVID crisis. With the ongoing pandemic, we hope to instead have the new cohort in Spring 2022.

Questions? Contact the Section NExT-RM Coordinators Mandi Schaeffer Fry, MSU Denver (aschae6@msudenver.edu) or Rebecca Swanson, Colorado School of Mines (swanson@mines.edu).

More History-based Classroom Resources Available from TRIUMPHS

It appears to me that if one wishes to make progress in mathematics, one should study the masters and not the pupils.

Niels Abel (1802 – 1829), as quoted in O Ore, “Niels Abel, Mathematician Extraordinary”

Over the past 6 years, the TRansforming Instruction in Undergraduate Mathematics via Primary Historical Sources (TRIUMPHS) project has sought to improve instruction in undergraduate mathematics by providing high-quality curricular resources based on the history of mathematics at no-cost to instructors or their students.

The foundation of this initiative has been the development, testing and dissemination of Primary Source Projects (PSPs) designed to teach core topics in today's undergraduate mathematics curriculum through engagement with primary sources. Two key features distinguish PSPs from standard mathematics textbooks. First, PSPs place students in direct contact with the writings of the individuals who created and shaped the mathematics they are expected to learn, thereby exposing important mathematical ideas, the motivations behind those ideas, and the ways in which experts think about them. The second distinguishing feature of PSPs is a carefully crafted series of tasks that are closely intertwined with primary source passages to help students explore, interpret, and engage with the mathematics in those passages. This "guided reading" approach thus maintains the benefits of learning from primary sources by providing context, motivation, and direction to undergraduate mathematics learning, while addressing challenges

associated with reading primary sources by incorporating active learning principles that allow for more student-centered teaching strategies than the typical lecture approach. All TRIUMPHS PSPs pass through a two-stage peer-review process before being made available for classroom use. Over the course of the grant, 133 faculty have served as site testers of PSPs in the collection, with projects used in over 240 classrooms at more than 100 different institutions across the US and Canada.

Although current NSF funding for the project winds down this coming year, TRIUMPHS continues to add new projects to the collection. **Individuals interested in writing their own project can receive mentorship from the PI team and a stipend for authoring a PSP**, and everyone is invited to freely use PSPs in the existing collection.

To date, the TRIUMPHS collection includes 80 PSPs on core topics taught in courses ranging across the entire undergraduate mathematics curriculum – and **nearly half of those have been written by members of the Rocky Mountain Section!** Here is a **small sampling of those titles**, to whet your appetites:

- “[The French Connection: Borda, Condorcet and the Mathematics of Voting Theory](#)” by Janet Heine Barnett (CSU Pueblo), suitable for use in a Liberal Studies, General Education or high school course.
- “[Representing and Interpreting Data with Playfair](#)” and three shorter mini-PSPs designed for use in introductory statistics courses by Diana White (CU Denver) and graduate students River Bond, Joshua Eastes & Negar Janani.
- “[Generating Pythagorean Triples via Gnomons](#)” by Janet Heine Barnett (CSU Pueblo), available in two versions, including one suitable for use with preservice elementary teachers.
- “[The Möbius Function and Möbius Inversion](#)” by Carl Lienert (Fort Lewis), designed for use in courses on geometry.
- “[A Look at Desargues' Theorem from Dual Perspectives](#)” by Carl Lienert (Fort Lewis), designed for use in number theory course.
- “[Bhāskara's Approximation and Mādhava's Infinite Series for Sine](#)” and two other mini-PSPs designed for use in first-year calculus courses by Kenneth M Monks (FRCC – Boulder Campus).
- “[The Fermat-Torricelli Point and Cauchy's Method of Gradient Descent](#)” and one other PSP designed for use in a multivariable calculus course by Kenneth M Monks (FRCC – Boulder Campus).
- “[Fourier's Heat Equation](#)” by Kenneth M Monks (FRCC – Boulder Campus), designed for use in differential equations.
- “[Roots of Early Group Theory in the Works of Lagrange](#)” and two other PSPs by Janet Heine Barnett (CSU Pueblo) designed for use in courses on abstract algebra and number theory.
- “[Bolzano's on Continuity and the Intermediate Value Theorem](#)” and six additional PSPs by Dave Ruch (MSU Denver) designed for use in an introductory analysis course.
- “[Riemann's Development of the Cauchy-Riemann Equations](#)” and two additional PSPs by Dave Ruch designed for use in a complex variables course.

All these and more, including another 30 PSPs that were written under two prior NSF grants, **are freely available for download** via links on the **TRIUMPHS website**: <https://blogs.ursinus.edu/triumphs/>

For **more information** about TRIUMPHS and opportunities to join the authorship team, **contact** janet.barnett@csupueblo.edu.

Convergence: Where Mathematics, History, and Teaching Interact

Interested in enriching your own teaching and your students' learning of mathematics through the use of history but not sure where to start? Take a look at [Convergence!](#)

MAA's free online journal about the history of mathematics and its use in teaching, *Convergence* is aimed at teachers of mathematics at both the secondary and collegiate levels and covers many topics from grades 8-16 mathematics, including algebra, combinatorics, synthetic and analytic geometry, trigonometry, probability and statistics, elementary functions, calculus, differential equations, and linear algebra.



A page from [al-Khwarizmi's](#) 825 algebra text *Kitāb al-jabr wa'l-muqābala* (from which we get the word “algebra”) in which he solves a quadratic of the form $x^2+bx=c$ by completing the square.

Since its establishment in 2004, *Convergence* has provided multi-webpage peer-reviewed articles on the history of mathematics and its uses in teaching, as well as an ever-expanding curated collection of materials for infusing some historical perspective into your teaching. These include:

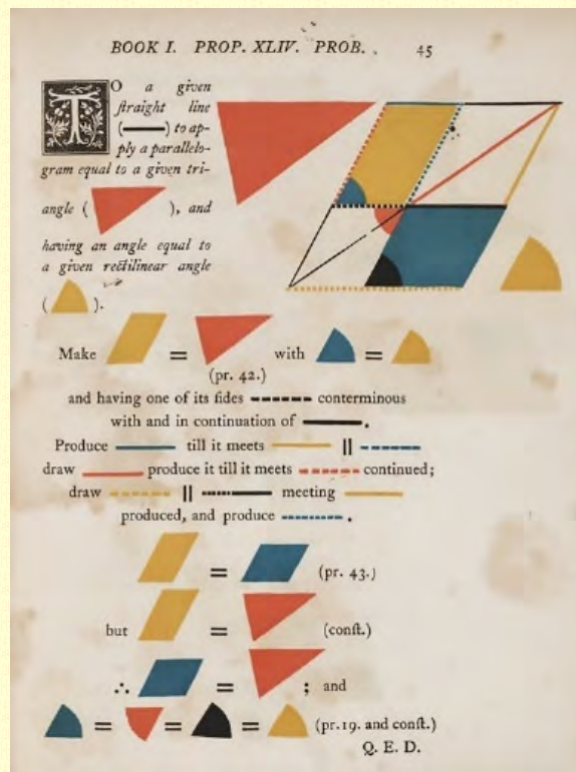
- [On This Day](#): Three or four historic mathematical events that happened on each date. There is also a Quotation for the Day.
- [Problems from another time](#): Mathematics problems from throughout mathematics history, as well as articles that include problem sets for students.
- Hundreds of [articles](#), searchable by topic (algebra, fractal geometry, statistics), type (activity, demonstration, problem set, project), and format (Maple, spreadsheet, JavaScript). Or you can use these [searching tips](#). There are also indices of [article series](#), [primary source translations](#) and [MAA award-winning articles on the history of mathematics](#).

- [Mathematical Treasures](#) and a [Portrait Gallery](#) with hundreds (thousands?) of images ready for classroom use.
- [Reviews](#) of new and old books, websites, and other teaching aids that focus on utility in the classroom.
- A [calendar](#) of meetings and events involving the History of Mathematics.

Convergence also serves as a unique vehicle for fostering your continued growth as a teacher-scholar by offering a highly visible peer-reviewed venue for publishing your own classroom ventures of a historical nature. Here are a few ways to make your own contribution:

- Use teaching tools such as one of our projects in your classroom and [tell us about your experiences](#).
- Develop teaching tools and modules for your classroom based on articles in *Convergence* and [share them with us](#).
- Write an [article](#)!
- Contribute an image from your own book collection or that at your library to our ever-expanding collection of [Mathematical Treasures](#).
- Become a *Convergence* referee.

Questions or ideas for a contribution of your own? You can reach out to *Convergence* editors Amy Ackerberg-Hastings and Janet Heine Barnett at convergence@maa.org, or contact RMS member janet.barnett@csupueblo.edu directly.



A Mathematical Treasure: Oliver Byrne, *The Elements of Euclid* (London, 1847). Courtesy of Columbia University.

MAA Rocky Mountain Section Guidance for Speakers

The Rocky Mountain Section would like to offer the following suggestions, especially to first-time speakers, regarding preparation of a talk at the conference.

1. The standard talk length is 20 minutes, (with longer times available upon request, subject to the limitations of the program). Thus, you should prepare your presentation to fit the time allotted. If possible, plan to leave a few minutes at the end of your presentation for questions.
2. A moderator will be assigned to facilitate each session of presentations. The moderator will introduce the speaker, assist in distribution of any handouts, signal the end of the presentation, and ask for questions from the audience.
3. If handouts are to be provided, give them to the moderator prior to the beginning of the session including your talk. Plan to bring about 35 handouts and be prepared to give attendees your e-mail address in case the supply runs out. It may also be possible to arrange for posting of electronic materials from your talk on the section website. Check with program organizers concerning this possibility.
4. Do not include too much detailed technical material in your presentation. Focus on providing the audience with insight into your topic and its key notions. Remember that most members of the audience will not be experts in the field you are discussing, and that the audience is likely to include students.
5. All session rooms will be equipped with a projector and a laptop hook up. Accordingly, you can present your talk using Power Point slides, PDF, or similar, which will greatly enhance the pace of a presentation. However, make sure that notes on the slides or transparencies are typed in a font big enough and with spacing adequate to be seen clearly 50 to 100 feet away.

Grants Available

Section Activity Grants Available

The purpose of the Section Activity Grants program is to assist Section members in funding projects in support of Section Mission. These projects must be clearly tied to one or more of the Rocky Mountain Section Mission Goals and the project director must be a member of MAA. Grants will not exceed \$750 per project. Matching funds from host institution are preferred, but not required. To apply for a Section Activity Grant, submit the following to the Section Secretary/Treasurer:

- (a) Description of project (no more than one page);
- (b) Statement of how project supports Mission Goals (no more than one page);
- (c) Estimated budget;
- (d) Description of matching funds available, if any;
- (e) Vitae of project director(s).

If funded, a report on the project will be filed by the Project Director upon completion (no more than one page) and a report will be made at the next meeting of the Section. Complete details on the selection process and application guidelines are posted on the section website. Grants will be reviewed once a year. All application materials are due November 1st of each year.

Student Recognition Grants Available

The establishment of a Student Recognition Grant Program was approved by the section membership at the 2003 Annual Business Meeting. In support of this program, the Section will set aside \$500 every calendar year. From these monies, the Section will make grants for the purpose of recognizing superior achievement in mathematics on the part of (1) students enrolled in post-secondary institutions within the geographic region served by the Section and (2) high school students whose school districts, or other appropriate political subdivisions, substantially intersect the geographic region served by the Section.

Proposals for such grants must

1. Originate from a member of the Rocky Mountain Section of the Mathematical Association of America on behalf of an agency, institution, or organization whose stated purposes are consistent with

recognizing or encouraging superior academic achievement at the high school level;

2. Be in the hands of the Chair of the Rocky Mountain Section no later than March 15 of the year in which the proposed recognition is to be made;
3. Include the criteria under which superior achievement in mathematics is to be recognized, together with the time and the manner of such recognition;
4. Report, insofar as possible at the time of the proposal, other potential sources of support together with proposals or requests made or intended; and
5. Be limited to a maximum amount of \$250.

The Executive Committee will review all proposals for grants under this policy and will make such grants as, in its sole judgment, it deems proper. In keeping with the section mission, funding priority will be given to grants that include recognition of undergraduate students. Funding decisions will be announced no later than the Annual Business Meeting of the Section. Monies not expended during any particular year shall revert to the Section's general fund.

Meetings Calendar

NCTM annual meeting; Atlanta, GA
September 22-25, 2021
AMATYC; Phoenix, AZ
October 28-31, 2021

Joint Mathematics Meetings; Seattle, WA
January 5-8, 2022
MAA Rocky Mountain Section Meeting,
Metropolitan State University, Denver
April 8-9, 2022

MAA MathFest; Philadelphia, PA;
August 3-6, 2022
MAA Rocky Mountain Section Meeting, BHSU
April TBD, 2023

MAA MathFest; Tampa, FL;
August 2-5, 2023
MAA MathFest; Indianapolis, IN;
August 7-10, 2024

**The Rocky Mountain Section of
The Mathematical Association of America**

**Burton W. Jones Award
for Distinguished College or University Teaching of Mathematics**

For information on the Burton W. Jones Award for Distinguished College or University Teaching of Mathematics, check out: https://www.rockymountain.maa.org/s/BWJones_nomination_form-2dqe.docx

Nomination forms should reach Section Awards Coordinator, Kyle Riley, Kyle.Riley@sdsmt.edu, by December 15 of each year. Complete nomination materials should reach Awards Coordinator by January 15 of each year.

Please consult the Section webpage (<http://sections.maa.org/rockymt>) for complete guidelines.

**The Rocky Mountain Section of
The Mathematical Association of America**

**Early Career Teaching Award
for Excellence in Teaching in the Mathematical Sciences**

For information on the Burton W. Jones Award for Distinguished College or University Teaching of Mathematics, check out: https://www.rockymountain.maa.org/s/EarlyCareer_nomination_form-tz6b.docx

Nomination forms should reach Section Awards Coordinator, Kyle Riley, Kyle.Riley@sdsmt.edu, by December 15 of each year. Complete nomination materials should reach Awards Coordinator by January 15 of each year.

Please consult the Section webpage (<http://sections.maa.org/rockymt>) for complete guidelines.

Early Career Teaching Award Guidelines

Part of the core mission for the Rocky Mountain Section is to provide recognition for quality mathematics teaching. The Early Career Teaching Award was established to recognize excellence in teaching in the mathematical sciences for faculty that are early in their career.

Eligibility

Nominees must:

- Hold a doctorate or master's degree
- Be college or university teachers who have held a full-time faculty appointment in a college department of mathematical sciences in the Rocky Mountain Section for at least two, but not more than seven, years since receiving their degree. A nominee who has just started the eighth year of teaching at the time of the application is still eligible for the award. If a nominee has held their degree for more than seven years, then the nominator must indicate on the nomination form the times that the nominee was not teaching. Common exceptions to the

seven year limit are maternity, paternity, family, or medical leaves. Sabbaticals and postdoctoral fellowships are exceptions only if they involved no teaching and the application does not include accomplishments made during these times.

- Hold membership in the Mathematical Association of America

Guidelines for nomination

Nominees for the award may be made by any member of the Rocky Mountain Section of the MAA.

Nominees should:

- Be recognized as extraordinarily successful in their teaching
- Have effectiveness in teaching undergraduate mathematics that can be documented
- Have had influence in their teaching beyond their own classrooms
- Foster curiosity and generate excitement about mathematics

Nomination form is due **December 15**. Complete nomination packet is due **January 15**.

Nomination Packet

A complete nomination packet should consist of the following documentation as it is described below.

1. **Nomination Form and One-Page Summary** - Describe the unusual and personal and professional qualities of the nominee that contribute to his or her extraordinary teaching success, and attach to this completed nomination form.
2. **Narrative (Up to 2 pages)** - Describe the nominee's extraordinary success in teaching by providing a narrative of the nominee's background, experience, teaching style, special contributions, other teaching awards, and any additional evidence of the nominee's unusual achievement in teaching. Note especially effectiveness in teaching undergraduate mathematics and influence beyond the nominee's own classrooms. The narrative should not exceed two single-spaced pages.
3. **Additional Documentation (Up to 2 pages)** - Submit no more than two pages of further evidence to document the nominee's extraordinary teaching success. This documentation will vary greatly from institution to institution, but may include summaries of peer or student evaluations, comments on teaching, possible increases in numbers of majors in mathematics (with clear evidence of the nominee's substantial responsibility for them), possible student success in mathematics competitions (with clear evidence of the nominee's substantial responsibility for them), success in research in mathematics conducted by undergraduate students under the direction of the nominee, production of superior quality honors theses by undergraduate students under the direction of the nominee, development of curricular materials successfully used by colleagues, adoption of the nominee's teaching methods or techniques by experienced colleagues, service as a respected adviser for a student group, etc.

Nominators should bear in mind that the selection committee for the award might view a nomination more positively if it is accompanied not just by carefully chosen testimonials from a few selected students and faculty, but also reports comments and criticism which is representative of the whole spectrum of opinion among students and faculty on the nominee's teaching.

4. **Letters of Recommendation (Each letter is one page. Maximum of 5 letters.)**
 - Two letters from the nominee's present or former students.
 - One letter from the nominee's colleagues (could be the department chair)
 - At most two additional letters from anyone qualified to comment on the nominee's extraordinary teaching success, including additional students and/or colleagues.

Voluntary Section Dues

Many thanks to those members who have made a voluntary dues contribution to the section along with their Spring Meeting Registration!

Although the section has found itself in good financial health in recent years, additional funds are always needed in order to pursue special initiatives suggested by the membership. The successful John Fauvel Memorial Conference and William Dunham Special Lecture, both supported in part by the Section Activity Grant program, provide excellent examples of what can be done with even a small amount of funding to support our section mission and goals.

Contributions may also be made in support of the Pikes Peak Regional Undergraduate Mathematics Conference; simply choose "Other" on the coupon below, and specify "PPRUMC" in the space provided.

A voluntary section dues contribution from you now can help build up funds in support of similar initiatives!

To submit your dues, simply return the coupon below with a check for any amount you wish - every little bit will help, and all contributors will receive a letter acknowledging the contribution for their financial records.

MAA Rocky Mountain Section Voluntary Dues Contribution Form

Name _____
Address _____
_____ ZIP _____

Please indicate in the space provided how you would like your dues to be used:

_____ Undergraduate Student Initiatives
_____ Graduate Student Initiatives
_____ Teaching Award Fund (Burton W. Jones DTA and ECTA)
_____ Section Activity Grant Program
_____ Wherever needed most
_____ Other: _____
_____ **TOTAL DUES PAID (\$10 recommended)**

Please make check payable to: **MAA Rocky Mountain Section** and return to:

Mona Mocanasu
MAA Rocky Mountain Section Treasurer/Secretary
Metropolitan State University of Denver
Department of Mathematical and Computer Sciences
Campus Box 38; PO Box 173362
Denver, CO 80217

MAA Rocky Mountain Section Mission Statement

**To promote excellence in mathematics education,
especially at the collegiate level.**

Mission Related Goals

1. To foster scholarship, professional development, and professional cooperation among the various constituencies of the mathematical community within the region.
2. To foster the implementation and study of recent research recommendations for the teaching, learning and assessment of collegiate mathematics.
3. To support the implementation of effective mathematics preparation programs of prospective teachers at all levels.
4. To enhance the interests, talents and achievements of all individuals in mathematics, especially of members of underrepresented groups.
5. To provide recognition of the importance of mathematics, mathematical research and quality mathematics teaching, and promote public understanding of the same.
6. To provide regional leadership in the promotion of systemic change in mathematics education, and in the enhancement of public understanding about the needs and importance of mathematical research and education.

About Our Logo

The logo for the Rocky Mountain Section of the Mathematical Association of America was created in by Mark Petersen in 2001. A graduate student in the Applied Mathematics Department at the University of Colorado at Boulder at that time, Mark says of his design:

“The mountain symbols were chosen because analysis is the foundation for all of mathematics. The equation $e^{j\pi} + 1 = 0$ must rank among the most beautiful formulas in mathematics. It connects the five most important constants of mathematics with the three most important operations - addition, multiplication, and exponentiation. These five constants symbolize the four major branches of classical mathematics: arithmetic, represented by 0 and 1; algebra, by i ; geometry, by π ; and analysis, by e . (Quoted from Eli Maor's *e, The Story of a Number*). I chose to portray this equation as a train because rail has historically been the life blood of the American West, and trains are complementary to any mountain scene.”