

## MAA THEMED CONTRIBUTED PAPER SESSIONS Call for Abstracts

The Mathematical Association of America will hold its ninety-ninth summer meeting in the Philadelphia Marriot Convention Center, 1201 Market Street (Guest Entrance At 1200 Filbert St), Philadelphia, PA, August 3-6, 2022. The purpose of this announcement is to alert participants to the themes of contributed paper sessions. MathFest participants are invited to submit abstracts of papers consistent with the themes of the sessions described below. The contributed paper sessions will be scheduled for Thursday, Friday, and Saturday, August 4-6. Information about scheduling will be posted on the MathFest website as soon as it is available. Presentations in the contributed paper sessions are normally 15 minutes in length. **Each participant may make at most one presentation in a contributed paper session but may be listed as co-authors on more than one abstract.** Each session room will be equipped with a computer projector and a screen. Speakers are encouraged to make use of the computer projector but must provide their own laptop computer or have access to one. To submit an abstract for MAA MathFest 2020, go to <https://cvent.me/geODE9> and follow the instructions found there. The deadline for submission of abstracts is April 30, 2022. Early submissions are encouraged.

### *1. MAA Session on Mathematical Experiences and Projects in Business, Industry, and Government (BIG)*

**Session Description:** The extraordinary growth of complex open-ended problems facing business, industry, and government, along with the flood of available information and data to address these challenges, may seem overwhelming. It should not! As mathematicians, operations research analysts, and engineers, including those within academia who have addressed these issues, we experience and tackle these problems with experience, knowledge, and technological tools. We solve applied mathematics problems in business, industry, and government, including military applications, almost daily. We seek presenters to share their real world applied examples of this type of problem-solving. These talks may include successful mathematical applications or problems where you have no clue how to proceed and are seeking ideas from our audience. Your talks will serve as inspiration to solve and tackle the real challenges that we may face in the future. You do not have to be a BIG SIGMAA member to attend or present.

**Sponsor:** BIG SIGMAA

**Organizers:**

Vinodh Chellamuthu, Dixie State University, [vinodh.chellamuthu@dixie.edu](mailto:vinodh.chellamuthu@dixie.edu)

Caroline Maher-Boulis, [cmaherboulis@leeuniversity.edu](mailto:cmaherboulis@leeuniversity.edu), Lee University

### *2. Innovative Ideas in Teaching Mathematics - Lessons from the Pandemic and its Aftermath*

**Session Description:** Ideas that have worked to support student learning through the pandemic, especially for courses in the first two years and ways to facilitate the high school to college transition. Presentations should demonstrate how the ideas can continue to be useful as we return to "normal" and should provide evidence of success.

**Sponsor:** MAA Subcommittee on Curriculum Renewal and the First Two Years

**Organizers:**

Andrew Bennett, Kansas State University, [bennett@ksu.edu](mailto:bennett@ksu.edu)

Chris Oehrlein, Oklahoma City Community College, [coehrlein@occc.edu](mailto:coehrlein@occc.edu)

Erica Whitaker, University of Kentucky [ewhitaker@uky.edu](mailto:ewhitaker@uky.edu)

### *3. Logic and Intuition in Everyday Mathematics*

**Session Description:** Many of us likely believe--and teach--that the role of proof is essential to the practice of pure mathematics. However, history is full of examples that suggest intuition may also play a meaningful role in the development of mathematical knowledge. Furthermore, computers can now supply (or at least verify) many of the logical steps in a mathematical proof, and even generate mathematical conjectures. This raises the question: what roles do logic and intuition play in mathematics? Is logic largely a scheme for demonstrating rigor and “correctness” after intuition has led us to a proposition that we believe to be correct? Or is logic more of an essential companion, informing our intuition and the very way think about our subject matter? This contributed paper session welcomes submissions reflecting on the relative roles of logic and intuition in mathematics, based on the contributor's historical/philosophical scholarship or lived experience as a working mathematician.

**Sponsor:** Philosophy of Mathematics SIGMAA (POM-SIGMAA)

**Organizers:** Jason Douma, University of Sioux Falls, [jason.douma@usiuouxfalls.edu](mailto:jason.douma@usiuouxfalls.edu)  
Tom Morley, Georgia Institute of Technology, [Morley@math.gatech.edu](mailto:Morley@math.gatech.edu)

### *4. Research in Undergraduate Mathematics Education*

**Session Description:** The goals of this session are to promote quality research in undergraduate mathematics education, to disseminate educational studies to the greater mathematics community, and to facilitate the impact of research findings on mathematics pedagogy. Presentations may be based on research in any undergraduate mathematical area. Examples include studies about students' reasoning, teaching practices, curriculum design, and professional development.

**Sponsor:** SIGMAA RUME

**Organizer:** Brian Katz, CSU Long Beach, [bpkatzteach@gmail.com](mailto:bpkatzteach@gmail.com)

### *5. Share the Joy in Teaching Differential Equations Through Modeling*

**Session Description:** Share experiences and the joy in using modeling to motivate and teach differential equations in context, both as an introduction to the mathematics and as a narrative of a complete modeling cycle from experiencing a real-world phenomenon, through data collection, to model building with parameter estimation, and finally model validation.

**Sponsor:** SIMIODE

**Organizers:** Brian Winkel, Director SIMIODE, Cornwall NY USA, [BrianWinkel@simiode.org](mailto:BrianWinkel@simiode.org)  
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### *6. Inviting High School Students to Explore Advanced Mathematics*

**Session Description** This session is for participants to share innovative ways to invite all high school students to further explore these advanced mathematical topics, such as discrete mathematics, number theory, linear algebra, and topology. This exploration can include, but is not limited to, specialized high school courses, dual enrollment courses, extracurricular programs, online courses, or including lessons within existing high school courses.

**Sponsor:** TAHSM

**Organizers:** Chuck Garner, Rockdale Magnet School for Science and Technology, [cgarner@rockdale.k12.ga.us](mailto:cgarner@rockdale.k12.ga.us)  
Bill Shillito, Oglethorpe University, [bshillito@oglethorpe.edu](mailto:bshillito@oglethorpe.edu)

### 7. *Inquiry-Based Learning*

**Session Description:** The goal of Inquiry-Based Learning (IBL) is to transform students from consumers to producers of mathematics. Inquiry-based methods aim to help students develop a deep understanding of mathematical concepts and the processes of doing mathematics by putting those students in direct contact with mathematical phenomena, questions, and communities.

**Sponsor** SIGMAA IBL

**Organizers:** Lee Roberson, University of Colorado-Boulder, [lee.roberson@colorado.edu](mailto:lee.roberson@colorado.edu)

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### 8. *Data for Good: Bringing Social and Professional Responsibility into the Statistics Classroom*

**Session Description:** The data deluge is impacting our everyday life - whether making decisions for us through targeted ads or through the lack of data privacy rights. This session seeks to address how to critically engage with issues related to social justice, equity, inclusion, ethics, and social/professional responsibility in the statistics and data science classroom through the use of data.

**Sponsor:** SIGMAA for Statistics and Data Science Education

**Organizer:** Grant Innerst, Shippensburg University, [ginnerst@ship.edu](mailto:ginnerst@ship.edu)

### 9. *Mathematics and Sports*

**Session Description:** The expanding availability of play-by-play statistics, video-based spatial data, and other sports data have led to innovative sports analytics research with impacts on strategy and player evaluation. Other areas of research include ranking methods, predictive models, physics-based analysis, etc. Research presentations, expository talks, and pedagogical contributions are all welcome in this session. Projects accessible to or involving undergraduate students are particularly encouraged for submission.

**Sponsor:** SIGMAA on Sports and Mathematics

**Organizers:** Russ Goodman, Central College, [goodmanr@central.edu](mailto:goodmanr@central.edu)

Hope McIlwain, Mercer University, [MCILWAIN\\_MH@mercer.edu](mailto:MCILWAIN_MH@mercer.edu), Mercer University

### 10. *The Impact of Interdisciplinary Collaborations: Lessons from SUMMIT-P and Other Projects*

**Session Description:** Interdisciplinary collaborations between mathematics and the partner disciplines will be presented. Presentations will describe the processes of interdisciplinary collaboration and/or particular examples of results from the collaborations, such as projects within courses, revamping courses, or other curricular change. Presentations will include evidence of success in the collaborative process, as well as evidence of impact on students and/or curricula.

**Sponsors:** Math Across the Disciplines subcommittee and the Committee on Curriculum Renewal Across the First Two Years subcommittee of the Committee on Undergraduate Programs in Mathematics.

**Organizers:** Mary Beisiegel, Oregon State University, [beisiegm@oregonstate.edu](mailto:beisiegm@oregonstate.edu)

Caroline Maher-Boulis, Lee University, [cmaherboulis@leeuniversity.edu](mailto:cmaherboulis@leeuniversity.edu)

11. *Quantitative Literacy and Reasoning as Tools for Learning Across the Disciplines*

**Session Description:** A beautiful characteristic of quantitative literacy and reasoning (QL/QR) is that they allow one to generate insights in myriad contexts and disciplines. In this session, we invite educators to share how they promote QL/QR as tools for accessing insights in a context or discipline within or outside of mathematics. We welcome a diverse collection of scholarly presentations.

**Sponsor:** SIGMAA-QL

**Organizers:** Kathryn Appenzeller, Texas A&M - San Antonio, [kknowles@tamusa.edu](mailto:kknowles@tamusa.edu)  
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12. *Coding Theory and its Applications*

**Session Description:** In this age of advanced communications and data storage, coding theory is inherently interesting in both theoretical and applied settings. The focus of this session is to share recent developments and applications of coding theory—such as in error-correcting codes, encoding and decoding algorithms, data compression, and codes developed from graph theory, algebraic geometry, number theory, combinatorics, and algebra.

**Organizers:** Angelynn Alvarez, Embry-Riddle Aeronautical University, [alvara44@erau.edu](mailto:alvara44@erau.edu)  
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13. *Math and Art*

**Session Description:** This session is an exploration of the interplay between mathematics and the arts. We invite presentations from across this spectrum, including artists who use math in their practice, mathematicians who study art, and educators who blend math and the arts in their classroom. We particularly encourage contributions on topics historically less represented in this session, such as dance, literature, film, and architecture.

**Sponsor:** SIGMAA-ARTS

**Organizers:** Anil Venkatesh, Adelphi University, [avenkatesh@adelphi.edu](mailto:avenkatesh@adelphi.edu)  
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Karl Kattchee, University of Wisconsin-La Crosse. [kkattchee@uwlax.edu](mailto:kkattchee@uwlax.edu)

14. *The Intersection of Mathematics and Justice*

**Session Description:** In this session, we showcase current mathematical research detailing both ongoing investigations of the intersections of mathematics and issues of justice, as well as local engagements of such issues in the classroom or in any pedagogical setting.

**Sponsor?** AWM

**Organizers:** Sarah Wolff, Denison University, [wolffs@denison.edu](mailto:wolffs@denison.edu)  
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Shanna Dobson, California State University Los Angeles, [Shanna.Dobson@calstatela.edu](mailto:Shanna.Dobson@calstatela.edu)

15. *Responding to Policy Changes that Impact Developmental Math Courses*

**Session Description:** This paper session will bring together presenters who are responding to recent policy changes that have eliminated or greatly reduced remedial or developmental mathematics courses at two- and four-year institutions. Presenters will focus on instructional models, curriculum, professional development and pedagogy, or other related topics. Presentations will connect these innovations to issues of equity and the impact on “minoritized learners”.

**Organizers:** Mary Pilgrim, San Diego State University, [mpilgrim@sdsu.edu](mailto:mpilgrim@sdsu.edu)  
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Gary Olson, University of Colorado Denver, [gary.olson@ucdenver.edu](mailto:gary.olson@ucdenver.edu)

#### 16. *Complex Analysis: History, Pedagogy, Innovation, and Research*

**Session Description:** Complex analysis, despite its beauty and power, seems to have lost some of the prominence it once enjoyed. To remedy this situation, we seek presentations that survey an episode in complex analysis of particular historical interest, demonstrate the use of complex analysis in art, elaborate on a new approach to a standard theorem, or report on an innovative pedagogical strategy.

**Organizers:** Russell Howell, Westmont College, [howell@westmont.edu](mailto:howell@westmont.edu)  
Mike Brilleslyper, Florida Polytechnic University, [mbrilleslyper@floridapoly.edu](mailto:mbrilleslyper@floridapoly.edu)

#### 17. *Integrating Math Modeling and Interdisciplinarity into Your Classroom*

**Session Description:** The Consortium for Mathematics and its Applications (COMAP) promotes applied mathematics and interdisciplinary problem solving through curricula and contests. COMAP contests challenge undergraduate students to use mathematics, computation, and scientific knowledge to solve real-world interdisciplinary problems. Faculty motivate and support these efforts by integrating modeling and interdisciplinarity into the curriculum. We encourage presenters to share and discuss their activities, practices, and experiences.

**Sponsor:** COMAP

**Organizers:** Kathleen Snook, COMAP, Inc., [kgsnook@gmail.com](mailto:kgsnook@gmail.com)  
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#### 18. *Mathematics and the Life Sciences: Initiatives, Programs, Curricula*

**Session Description:** The 2015 CUPM Curriculum Guide to Majors in the Mathematical Sciences identified the life sciences as a key path through the mathematics major to graduate programs and the workforce. Presentation topics include scholarly contributions addressing initiatives, programs, curricula, and course materials at the interface of mathematics and the life sciences that have been implemented and tested at institutions of higher education.

**Sponsor:** BIO SIGMAA

**Organizers:** Timothy Comar, Benedictine University, [tcomar@ben.edu](mailto:tcomar@ben.edu)  
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Carrie Diaz Eaton, Bates College, [cdeaton@bates.edu](mailto:cdeaton@bates.edu)

### 19. *Supporting Pandemic Prepared Students*

**Session Description:** Due to COVID-19, students are arriving in calculus and other mathematics classes in college with the same high school math classes as typical, but with notably different preparation due to the pandemic. How do departments and faculty provide extra support for students with weaker preparation or larger holes in their background? This session welcomes talks on this topic that offer analysis or effective models such as supplemental instruction or corequisite courses, to help us all serve our students as well as possible.

**Organizers:** Kim Roth, Juniata College, [roth@juniata.edu](mailto:roth@juniata.edu)  
Russell Goodman, Central College, [GoodmanR@central.edu](mailto:GoodmanR@central.edu)  
Melissa Innerst, Juniata College, [innerst@juniata.edu](mailto:innerst@juniata.edu)

### 20. *Recreational Mathematics: Puzzles, Card Tricks, Games, and Gambling*

**Session Description for Web:** Puzzles, card tricks, board games, game shows, and gambling provide an excellent laboratory for testing mathematical strategy, probability, and enumeration. The analysis of such diversions is fertile ground for the application of mathematical and statistical theory. Solutions to new problems as well as novel solutions to old problems are welcome.

**Sponsor:** SIGMAA on Recreational Mathematics

**Organizers:** Paul Coe, Dominican University, [coepaul@dom.edu](mailto:coepaul@dom.edu)  
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Kristen Schemmerhorn, Concordia University Chicago, [Kristen.Schemmerhorn@cuchicago.edu](mailto:Kristen.Schemmerhorn@cuchicago.edu)

### 21. *Pursuing Justice in and through Mathematics*

**Session Description:** We invite presenters to share their efforts in pursuing justice, diversity, equity, and inclusion in their teaching, curriculum development, assessment practices for students, evaluative processes for faculty, departmental climate, enriched story-telling about mathematicians, and broader public outreach. We are particularly interested in the integration of social justice into traditional mathematics courses, including special topics, quantitative reasoning, and/or the redesign College Algebra, Calculus, or Differential Equations.

**Organizers:** Alex McAllister, Centre College, [alex.mcallister@centre.edu](mailto:alex.mcallister@centre.edu)  
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Adriana Salerno, Bates College, [asalerno@bates.edu](mailto:asalerno@bates.edu)

### 22. *Math Circles: Talks about Mathematical Joy, Inspirations, Data-Driven Lessons Learned*

**Session Description:** The Math Circle community has been working hard over the last several years to maintain enthusiasm for mathematics in a variety of mathematical outreach and enrichment settings – bringing joy and fun for a bit of time when many have felt disconnected. Presenters in this themed session will share the ideas that worked well, that connected, and that brought moments of joy. These ideas don't need to be your own work, presenters can talk about who inspired their idea and discuss how they have adapted other Math Circles leaders' ideas to inspire their own. Presenters are also encouraged to share strategies used to successfully engage with virtual audiences, support the needs of diverse learners, improve outreach, along with any other (qualitative or quantitative) data-driven ideas that improve engagement experiences.

**Sponsor:** SIGMAA-MCST

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