

MAA THEMED CONTRIBUTED PAPER SESSIONS

The Mathematical Association of America will hold its ninety-seventh summer meeting in the Philadelphia Marriot Convention Center, 1201 Market Street Guest Entrance At 1200, Filbert St, Philadelphia, PA, July 29 – August 1, 2020. Information regarding the program will appear in the April/May issue of MAA FOCUS and much of the program is already available online at www.maa.org/mathfest. 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, July 30-August 1. 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-participants may be listed as co-authors on more than one abstract, but can only present once.** If your paper cannot be accommodated in the session for which it was submitted, it will automatically be considered for the MAA poster session. 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 www.maa.org/mathfest/abstracts and follow the instructions found there. The deadline for submission of abstracts is April 30, 2020. Early submissions are encouraged.

1. Computational Investigation in Undergraduate Mathematics

Description: Computational tools help students explore mathematical concepts, formulate questions, and test conjectures. This session will highlight strategies for incorporating computational mathematics into the undergraduate math curriculum. We encourage talks on computational investigation of mathematical topics, the interplay of computation and proof, computation in the development of mathematical maturity, and assessment of computational learning goals.

Organizer: Matthew Wright, St. Olaf College, Contact: wright5@stolaf.edu

2. Real World Examples in Abstract Algebra & Number Theory

Description: Providing context to topics from an undergraduate abstract algebra or number theory course helps ground the concepts in reality, increase engagement and spur interest. In these talks presenters will share their best real world example from these courses; providing an overview of the mathematical concept and explaining how their example is related to the underlying mathematics. Talks should be accessible to undergraduate mathematics majors.

Organizers:

Scott Williams, University of Central Oklahoma, rwilliams77@uco.edu

Erin Williams, University of Central Oklahoma, ewilliams50@uco.edu

3. Mathematics and the Life Sciences: Initiatives, Programs, Curricula

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. 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.

Organizers:

Timothy D. Comar, Benedictine University, tcomar@ben.edu

Raina Robeva, Randolph-Macon College, RainaRobeva@rmc.edu

Carrie Diaz Eaton, Bates College, cdeaton@bates.edu

Sponsor: BIO SIGMAA

4. Modeling in Your Differential Equations Course – Just Do It!

Description: In differential equations, a pivotal STEM course, effort is given to doing modeling to motivate students and facilitate transferability to cognate areas. Faculty who do modeling in differential equations courses share their efforts. This session offers experiences, plans, and aspirations with specific, rich illustrations of modeling to enhance skills in both differential equations and its applications.

Organizers:

Brian Winkel, SIMIODE (www.simiode.org) Director, Cornwall NY, BrianWinkel@simiode.org

Rosemary Farley, Manhattan College, Riverdale NY, rosemary.farley@manhattan.edu

Janet Fierson, LaSalle University, Philadelphia PA, fierson@lasalle.edu

Therese Shelton, Southwestern University, Georgetown TX, shelton@southwestern.edu

Patrice Tiffany, Manhattan College, Riverdale NY, patrice.tiffany@manhattan.edu

Sponsor: SIMIODE

5. Math In Action

Description: Mathematics is in action within many beautiful non-mathematical settings, spanning from interplays with the sciences, to unexpected applications to games, art, social justice, and economics, among others. This session invites presenters to share work in which mathematics is used in another field. We encourage joint presentations by teams or advisor-student pairs. This session is in conjunction with the IPS “Women In Math: Math In Action”

Organizers:

Cassie Williams, James Madison University, willi5cl@jmu.edu

Shanna Dobson, California State University, Los Angeles, shanna.dobson@calstatela.edu

Janet Fierson, La Salle University, fierson@lasalle.edu

Emelie Kenney, Siena College, kenney@siena.edu

Sarah Wolff, Denison University, wolffs@denison.edu

Sponsor: AWM

6. Practices to Reduce Mathematics Anxiety

Description: This session features papers on practices that have helped students overcome mathematics anxiety, such as classroom or office hours interventions, course-wide approaches to teaching and learning, course revision, and program-wide reforms. Papers may also be about research on math anxiety or practices that were intended to help students overcome their mathematics anxiety but did not achieve this objective.

Organizers:

Victor Piercey, Ferris State University, VictorPiercey@ferris.edu

Debra K. Borkovitz, Boston University, dbork@bu.edu

Raman Rohatgi, Saint Mary's College at Notre Dame, rrohathgi@saintmarys.edu

Zoe Misiewicz, State University of New York at Oswego, zoe.misiewicz@oswego.edu
Azadeh Rafizadeh, William Jewell College, rafizadeha@william.jewell.edu
Timothy Goldberg, Lenoir-Rhyne University, Timothy.Goldberg@gmail.com
Maria Fung, Worcester State University, mfung@worchester.edu

7. Online Pedagogy of Upper Division Mathematics

Description: Much of the discussion of online mathematics courses has been focused on lower division courses that serve other disciplines or the general education curriculum. In this session, we will address pedagogical strategies for delivering upper division courses in an online setting. Included in the discussion will be topics related to course design, content delivery, student interaction, and assessment.

Organizers:

George H. Lytle, University of Montevallo, glytle@montevallo.edu
Cheryll C. Johnson, Asbury University, cheryll.johnson@asbury.edu

8. Interplay Between Digital Mathematics Learning and Effective Pedagogical Tools

Description: In this session we intend to showcase some of the best practices in undergraduate mathematics instruction that are enhanced by digital tools and effective pedagogical practices. Talks will include links for getting started with a platform, sharing of materials for use, and both evidence and rationale that pedagogy was enhanced. Speakers are encouraged to address the integration of open educational resources, e.g., open (free) books with randomized question libraries that have nominal costs. Moreover, the presenters will explore the effectiveness of electronic assessments, such as formative versus summative, while including (but not limiting to) dynamic and/or adaptive forms. Moreover, participants will compare their platform of choice to other available platforms, along with suitable pedagogical tools (e.g., blended learning, active learning, project-based learning).

Organizers:

Ariel Cintron-Arias, East Tennessee State University, cintronarias@etsu.edu
Benjamin Atchison, Framingham State University, batchison@framingham.edu
Michael Miner, American Public University System, michael.miner0@mycampus.apus.edu
Sharon Mosgrove, Western Governors University, sharon.mosgrove@wgu.edu
Ryan Nivens, East Tennessee State University, nivens@etsu.edu
Douglas Scheib, Western Governors University, douglas.scheib@wgu.edu
Philip Smith, East Tennessee State University, smithpa@etsu.edu
Carolyn Yackel, Mercer University, yackel_ca@mercer.edu

Sponsor: MAA Committee on Technology in Mathematics Education

9. Mastery Grading

Description: Mastery grading includes assessment techniques such as standards-based grading, specifications grading, and mastery-based testing. In these, a student's grade is directly tied to their mastery of specific objectives rather than collecting points or partial credit. We invite scholarly presentations that give practical implementation advice (particularly in large or coordinated courses) and provide evidence of the efficacy of mastery grading.

Organizers:

David Clark, Grand Valley State University, clarkdav@gvsu.edu
Mike Janssen, Dordt University, mike.janssen@dordt.edu

Austin Mohr, Nebraska Wesleyan University, amohr@nebrwesleyan.edu
Cassie Williams, James Madison University, willi5cl@jmu.edu

10. Course-Embedded Undergraduate Research Experiences in Mathematics

Description: A Course-Embedded Undergraduate Research Experience (CURE) is a practice of scientific disciplines (fewer in math) embedding research experiences into classrooms. This session seeks evidenced-based practices implementing research into classrooms at all levels with the goal to define a CURE experience in math. Presentations may include class projects, activities, whole semester projects or other forms of mathematical research within a course.

Organizers:

Peri Shereen, CSU Monterey Bay, pshereen@csumb.edu
Lipika Deka, CSU Monterey Bay, ldeka@csumb.edu
Jeffrey Wand, CSU Monterey Bay, jwand@csumb.edu

11. Improving Success in College Mathematics Courses

Description: Many faculty in higher education have experienced their students struggle with mathematics skills that should have been mastered earlier. In this session, we will consider how to address the challenges that faculty face in teaching mathematics to an under-prepared audience, share strategies for strengthening skills and fostering interest in mathematics, and explore solutions for improving success in college mathematics courses. In particular, we will explore the innovations in the co-requisite model in developmental mathematics education, and share class and programmatic structures utilized to support STEM Pathways.

Organizers:

Daniel A. Daly, Southeast Missouri State University, ddaly@semo.edu
Haohao Wang, Southeast Missouri State University, hwang@semo.edu
Mary M. Legner, Riverside City College, mm.legner@rcc.edu
Gregory D. Foley, OHIO UNIVERSITY, foleyg@ohio.edu
Katherine J. Mawhinney, Appalachian State University, mawhinneykj@appstate.edu
Katrina Palmer, Appalachian State University, palmerk@appstate.edu
Melissa Reid, Rowan-Cabarrus Community College, melissa.reid@rccc.edu

12. Encouraging Effective Teaching Innovation

Description: This session will consist of presentations of demonstrably effective and innovative classroom techniques that address the reasoning behind, design, and implementation of resources or activities. This may include whole course techniques (not necessarily original to the presenter) or drop-in activities to bolster student learning and reflection in any course. Materials will be shared after the session at <http://mathfest2020.davidfailing.com/>

Organizers:

Susan Crook, Loras College, susan.crook@loras.edu
David Failing, Lewis University, dfailing@lewisu.edu
Mami Wentworth, Wentworth Institute of Technology, wentworthm1@wit.edu
Mel Henriksen, Wentworth Institute of Technology, henriksenm@wit.edu
Russ Goodman, Central College, GoodmanR@central.edu
Abigail Bishop, Iona College, abishop@iona.edu
Erin Moss, Millersville University of Pennsylvania, Erin.Moss@millersville.edu

13. Effectively Utilizing Undergraduate Teaching Assistants

Description: At both research and teaching institutions, instructors have the opportunity to make use of undergraduate teaching assistants in the mathematics classroom to enhance instruction. This session seeks to share evidence-based practices about the use and support of undergraduate TAs in the classroom.

Organizers

Carolyn Yackel, Mercer University, yackel_ca@mercer.edu

Emily Braley, Harvard University, braley@math.harvard.edu

Doug Ensley, Shippensburg University, deensley@ship.edu

Sponsor: Committee for the Teaching of Undergraduate Mathematics and CoMInDS

14. Classroom Capsules and Student Enrichment

Description: This session focuses on mathematics accessible to undergraduates but not part of the standard curriculum. Classroom Capsules offer a fresh take on a topic in the undergraduate curriculum and include tips for classroom use. Student Enrichment talks focus on extracurricular topics suited, say, for a colloquium talk. Ideas should be novel, surprising, or deserve to be more widely known, e.g. elegant proofs, extensions of standard topics, novel applications, or striking historical links.

Organizers:

Dan Kalman, American University, dan@dankalman.net

Bud Brown, Virginia Tech, Contact: ezbrown@math.vt.edu

James Parson, Hood College, Contact: parson@hood.edu

Jill Tysse, Hood College, Contact: tysse@hood.edu

15. Applications of Technology-Driven Representations to Deepen Student Mathematical Knowledge

Description: Considering multiple representations of a mathematics concept represents a powerful approach for deepening student knowledge. Demands for incorporating these representations into instruction emerge as technology becomes increasingly available. This session invites scholarly presentations on the use of technology-driven representations for the teaching and learning of mathematics.

Organizers:

Aaron Trocki, Elon University, atrocki@elon.edu

Jim Beuerle, Elon University, jbeuerle@elon.edu

Todd Lee, Elon University, tle@elon.edu

Jan Mays, Elon University, jmays@elon.edu

16. Diversity, Equity, and Inclusion in Mathematics

Description: National data trends indicate a need to shift representation in mathematics with respect to diversity, equity, and inclusion. In response, many departments and instructors have sought to understand the barriers that inhibit persistence and success in mathematics, particularly among underrepresented minority, first-generation, low-income, and female students. This session invites presenters to share how they engage diverse student populations.

Organizers:

Joel Kilty, Centre College, joel.kilty@centre.edu

Annalisa Crannell, Franklin & Marshall College, annalisa.crannell@fandm.edu

Robin Cruz, College of Idaho, RCruz@collegeofidaho.edu
Alex M. McAllister, Centre College, alex.mcallister@centre.edu
Chad Topaz, Williams College, cmt6@williams.edu

17. More than Math: Resilience, Growth Mindset, and Transferable Skills

Description: Alongside teaching mathematics, many instructors implement learning experiences oriented toward their students' personal development. Such an approach enables student success in our classes and beyond by fostering particularly effective attitudes, mindsets, and transferable "soft skills" that rank among those most highly desired by employers. Talks focus on how presenters engage students in fostering effective mindsets and in developing transferable skills.

Organizers:

Sean Droms, Lebanon Valley College, droms@lvc.edu
Sara Malec, Hood College, malec@hood.edu
Joel Kilty, Centre College, joel.kilty@centre.edu
Alex M. McAllister, Centre College, alex.mcallister@centre.edu
Prayat Poudel, Centre College, prayat.poudel@centre.edu

18. Games in Math Circles

Description: We will focus on games in math circles. Such games are fun to play but they also offer opportunities for participants to think deeply about optimal strategies and do meaningful computations. Computer simulations of games or the coding of a master player that the circle can compete against are possibilities. Some games are not what they seem as they can be nearly determined by the opening setup but seeing this involves some deep frustration.

Organizer: Edward C. Keppelmann, University of Nevada Reno, keppelma@unr.edu

Sponsor: SIGMAA ON MCST

19. Recreational Mathematics: Puzzles, Card Tricks, Games, and Gambling

Description: 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. Submissions by undergraduates are encouraged.

Organizers:

Paul R. Coe, Dominican University, coepaul@dom.edu
Sara B. Quinn, Dominican University, squinn@dom.edu
Kristen Schemmerhorn, Concordia University Chicago, kristen.schemmerhorn@cuchicago.edu
Andrew Niedermaier, Jane Street Capital, aniedermaier@janestreet.com

Sponsor: SIGMAA on Rec Math

20. Mathematics and Sports

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

Organizers:

Liz Bouzarth, Furman University, liz.bouzarth@furman.edu
Diana Cheng, Towson University, dcheng@towson.edu
John David, Virginia Military Institute, davidja@vmi.edu

Sponsor: Sports SIGMAA

21. Research in Undergraduate Mathematics Education

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.

Organizers:

Brian P. Katz, Smith College, Contact: bkatz24@smith.edu
Shiv Smith Karunakaran, Michigan State University, karunak3@msu.edu
Nicole Engelke Infante, West Virginia University, Nicole.Infante@mail.wvu.edu

Sponsor: SIGMAA RUME

22. Inquiry-Based Teaching & Learning

Description: Inquiry-Based Learning (IBL) aims to transform students from consumers to producers of mathematics. IBL methods help students develop deep understanding by connecting them with mathematical phenomena, questions, and communities. This session invites scholarly presentations on IBL teaching and learning methods. Talks on successful IBL activities, evidence-based IBL research, and talks that can help new IBL instructors are especially encouraged.

Organizers:

Carl Mummert, Marshall University, mummertc@marshall.edu
Susan Crook, Loras College, Susan.Crook@loras.edu
David Failing, Lewis University, dfailing@lewisu.edu
Amy Ksir, US Naval Academy, ksir@usna.edu
Nathaniel Miller, U. Northern Colorado, nathaniel.miller@unco.edu
Victor Piercey, Ferris State University, VictorPiercey@ferris.edu

Sponsor: IBL SIGMAA