Math Circles Events at JMM Denver 2020

Wednesday, January 15

- Exhibit Booth, 12:15 — 5:30pm
  Games, puzzles, activities, and opportunities to visit with Math Circle enthusiasts

- MAA Contributed Paper Session, *Tangents to Math Circles,* 2:15 — 6:10pm, Room 506 CCC
  Sponsored by SIGMAA-MCST (see reverse for titles and abstracts)
  Organized by Amanda Serenevy, Riverbend Community Math Center, and
  James Taylor, Math Circles Collaborative of New Mexico

- SIGMAA-MCST Business Meeting, 6:15 — 7:15 pm, Room 506 CCC

Thursday, January 16

- Exhibit Hall Booth, 9:30am — 5:30pm
  Games, puzzles, activities, and opportunities to visit with Math Circle enthusiasts

Friday, January 17

- Exhibit Hall Booth, 9:30am — 5:30pm
  Games, puzzles, activities, and opportunities to visit with Math Circle enthusiasts

- Math Circles Reception, sponsored by AIM, 6:00 — 8:00 pm at local restaurant
  The Oceanaire Seafood Room, 1400 Arapahoe Street; see map on last page.
  Mingle with the Math Circle community. Hors d'oeuvres provided, beverages available for purchase.

Saturday, January 18

- Exhibit Hall Booth, 9:00am —12:00pm
  Games, puzzles, activities, and opportunities to visit with Math Circle enthusiasts

- Julia Robinson Mathematics Festival, 1:00-3:00pm, Mile High Ballroom 4a-4c, CCC
  Details at https://jrmf.org/event-details/jrmf-at-jmm-2020
  Organizers:
  Thomas J. Clark, Dordt University
  Mark Saul, Julia Robinson Mathematics Festival
  Hector Rosario, Julia Robinson Mathematics Festival
  Phil Yasskin, Texas A&M University

Check out the Special Interest Group of the MAA on Math Circles for Students and Teachers (SIGMAA-MCST)

http://sigmaa.maa.org/mcst/

the Math Teachers' Circle Network (sponsored by AIM, the American Institute for Mathematics)

https://www.mathteacherscircle.org/

and the Julia Robinson Mathematics Festival

https://jrmf.org/

Math Circles Library as a source of thought-provoking problems for math circles and classrooms
2:15 — 2:30 p.m.
Tatiana Shubin, *San Jose State University*

MSRI MCL is an AMS book series founded in 2008. By now, 24 volumes have been published and several more are getting ready. These volumes are incredibly versatile, ranging from books intended for use with preschoolers to texts suitable for undergraduate college courses. In the talk we will share a number of gem problems found in the MCL books and will discuss possible future developments for the series.

Math Circle-type Activities in K-5 Intervention Classes
2:35 — 2: 50 p.m.
Gabriella Pinter, University of Wisconsin-Milwaukee

Multiple research studies show that early math (K-3) is critical for students and is a better predictor of later school success than early literacy or social skills. The UWM Strong Start in Mathematics program was a three-year program for a cohort of K-3 teachers in public schools in Milwaukee supported by a grant from the US Department of Education through the Wisconsin Department of Public Instruction. Throughout the program teachers participated in Math Circle type activities and games connected to number sense, number and operations in base ten and geometry. This program catalyzed a healthy university-school-community partnership that has promising plans to bring the excitement of fun mathematical activities, puzzles and games to the families, schools and communities in Milwaukee County. In this talk we will present some activities that were used successfully in K-5 math intervention classes and that would work well with young children in general. We believe that if children grow up with more exposure to games and puzzles in the family, daycare and kindergarten then they develop better number sense and reasoning skills. Our aim is to spread math excitement in the community to generate curiosity and bring about change in the perception of mathematics.

Mathematical Zendo
2:55 — 3:10 p.m.
Corey Pooler and Philip DeOrsey, *Westfield State University*

Mathematical Zendo is a logic game that actively engages participants in problem solving and critical thinking. While originally created for math circle sessions, we have adapted this game to be used in the mathematics classroom. The goal for participants is to guess a secret rule that has been chosen by the leader of the game. The rules are guided by chosen mathematical topics, and teams of participants compete against each other in order to guess the correct rule first. During this talk we will demonstrate the game, and discuss best practices for its implementation. A teacher guide will also be provided for all participants.

From Math Circles to Science Fairs
3:15 — 3:30 p.m.
Liz Lane-Harvard, *University of Central Oklahoma*

Math Circle activities are generally low-threshold, high-ceiling. Hence, many problems can be utilized in Science and Engineering Fair competitions. In this talk, potential projects will be presented. Additionally, the structure of a particular Science Fair will be addressed, along with how it incorporates other Math Circle activities.

Cold War Escape Rooms (and other Student to Student Math nights)
3:35 — 3:50 p.m.
Michael E Matthews, **Greg Lawson**, **Hannah Seidl**, **Rachel Pugh**, *University of Nebraska at Omaha*

At the University of Nebraska at Omaha the Noyce Scholars have created a student-run set of Math Nights for local middle school students that we hold several times a year. The events have been very popular and tend to fill up quickly. The most successful math circles of late have taken the form of Escape Rooms - especially themed Escape Rooms. In Spring 2019, the Noyce Scholars hosted a Cold War themed Escape Room. The Scholars were able to successfully integrate a bit of history into their room while creating fun math-related puzzles for the middle -school-aged students to explore. We will share some of our best puzzles and discuss best practices that we have learned about how to run effective Math Nights and Themed Escape Rooms in which students engage in fun and meaningful mathematics.

Circles Tangent to Calculus
3:55 — 4:10 p.m.
Sharon Lanaghan and Carolyn Yarnall, *California State University, Dominguez Hills*

How can a mathematics department provide a meaningful experience to incoming first-year STEM students with a wide variety of high school experiences and place them appropriately on a path to calculus? At CSUDH, we offer a 1-unit problem-solving course using problems from our Math Teachers Circle. The problems involve all students in doing mathematics, and allow them each to contribute and grow at their own level. Meanwhile, algebra review is provided by ALEKS software done primarily outside of class.
How is it working? In this session, we will describe our program and curriculum and share preliminary data collected from the program.

(MC)^2: Math Club as a Math Circle
4:15 — 4:30 p.m.
Sarah Cobb and Marcos Lopez, *Midwestern State University*
The Midwestern State University Math Club has become a program that allows students to engage with mathematics not usually seen in their undergraduate curriculum. Instead of following a prescribed list of examples and problems, meetings now mimic the structure of a math circle. As a result of this transformation, students have grown in mathematical creativity and independence, and several students have joined our department. We will discuss how we have used math circle topics in this setting and the ways that transitioning to a math circle model has helped us achieve our goals for the MSU math club.

Math Circle problems to undergraduate capstone projects
4:35 — 4:50 p.m.
Chiru Bhattacharya, *Randolph-Macon College*
Puzzles and modular arithmetic are popular and accessible math circle topics. We describe two problems with beginnings in math circles which were adapted to undergraduate capstone projects.

Werewolves and Addicts: An Exploration of Math Modeling and Stigma
4:55 — 5:10 p.m.
Anne M. Ho and W. Christopher Strickland, *University of Tennessee*
Games have been used in classrooms and math circles as a fun way to actively engage students. They can also be used as a more comfortable way to ease into a conversation about a difficult topic. In this talk, we will present the first iteration of a new game which invites participants to think about the effects of stigma on the opioid crisis. This game was first run at a Math Teachers' Circle and is based on Bezier Games' One Night Ultimate Werewolf. We will describe the details of the design to connect mathematical thinking with a sociology model of stigma (Goffman 1975) as well as SIAM's guidelines for teaching math modeling (GAIMME 2019). In addition, we will discuss participant reactions and comments. Lastly, we will present ideas for future work to modify this game for nursing education.

Widening the East Texas Math Teachers' Circle
5:15 — 5:30 p.m.
Jane H Long, *Stephen F. Austin State University*
The East Texas Math Teachers' Circle has been operating since 2013. In that time, we've partnered with federal grant programs (GEAR UP, NSF Noyce), incorporated a Math Circle demonstration at our MAA section meeting, offered professional development and G/T credits for area teachers, hosted Julia Robinson Mathematics Festivals, incorporated Math Circle problems in seminar courses, and strengthened our departmental connections by welcoming pre-service teachers and faculty. In this talk, we will discuss details of these endeavors.

Fresno Math Circle Program: Much More Than Just a Math Circle
5:35 — 5:50 p.m.
Maria S. Nogin and Adnan H. Sabuwala, *California State University, Fresno*
The Fresno Math Circle program includes a traditional math circle for students as well as local and national competitions and preparation sessions for them, and presentations at local schools. Undergraduate, credential, and graduate students are involved in leading or co-leading various sessions under the guidance of the university faculty. We will describe multiple benefits of this format and how we are building the mathematical community in our area.

MathAmigos: A Community Math Initiative
5:55 — 6:10 p.m.
James C Taylor, *MathAmigos and Math Circles Collaborative of New Mexico*
I present an overview of a broad, and fairly novel, community mathematics initiative in its first two years in Santa Fe, New Mexico. This was the subject of an article in the new Journal of Math Circles published this summer, and in this talk I will summarize our program, including the latest developments from summer and fall of 2019. At every level, our program embraces community-wide collaboration—from the leadership team, to the elements of the mathematics being implemented (primarily math circles and the Global Math Project's Exploding Dots), to the funding model. Our MathAmigos program now includes three categories of math circle-related programs: professional development (PD), classroom/after-school weekly student math circles (in which we hope to include math wrangle practice), and math festivals. In our outreach with professional development, student math circles and festivals, we work closely with the Santa Fe Public School district and some charter schools. I will further touch on one of the more novel components of our PD: the use of retired master teachers as classroom coaches.

Math Circles Reception, sponsored by AIM
Friday, January 17, 6:00-8:00 pm

- The Oceanaire Seafood Room

- Hors d'Oeuvres provided; beverages available for purchase.

- Mingle with the Math Circle community at this informal event!

Directions from the Colorado Convention Center to The Oceanaire Seafood Room, 1400 Arapahoe (0.3 miles):

- Head north toward Stout St

- Turn right onto Stout St

- Turn left onto 14th St

- Turn right onto Arapahoe St

- Destination will be on the right