# Mathematical Association of America Fall 2018 Meeting of the New Jersey Section 



Montclair State University Center for Computing and Information Science (CCIS) Montclair, NJ

Saturday, October 27, 2018

## Abstracts and Biographies of Speakers

## Writing Numbers as the Sum of Factorials Suzanne Dorée <br> Chair of MAA Congress; Augsburg University

In standard decimal notation, we write each integer as the linear combination of powers of 10. In binary, we use powers of 2 . What if we used factorials instead of exponentials? How can we express each integer as the sum of factorials in a minimal way? This talk will explore the factorial representation of integers, including historical connections to permutations, a fast algorithm for conversion, and the secret of the "third proof by mathematical induction." Next, we'll extend this representation to rational and then real numbers, ending with a guest appearance by the generalized hyperbolic functions and some remaining open questions.

Suzanne Dorée is Professor of Mathematics and chair of the Department of Mathematics, Statistics, and Computer Science at Augsburg University in Minneapolis where she has taught since 1989. She earned her Ph.D. in Character Theory from the University of Wisconsin-Madison. Her research interests include curriculum and materials development and directing undergraduate research in combinatorics. She enjoys teaching mathematics at all levels using pedagogies that support active and inquiry-based learning. Dr. Dorée is active in the Mathematical Association of America, currently serving as Chair of the MAA Congress and Chair of the Council on Programs and Students. An avid gardener, cook, and designer, she appreciates the importance of getting her hands dirty, and not just in mathematics.

## Enumerative Geometry: Numbers and Beyond Linda Chen Swarthmore College

Enumerative geometry problems have been studied by algebraic geometers since the nineteenth century. Indeed, enumeration was the subject of Hilbert's

Fifteenth problem. We will explore several enumerative problems and describe some underlying structures that encode the numbers. For example, a breakthrough in the 1990's inspired by physics gave surprising and beautiful answers to classical enumerative geometry problems, such as the enumeration of degree d rational plane curves passing through 3d-1 general points. I will also discuss extensions and open problems.
Linda Chen earned her PhD from the University of Chicago. Before arriving at Swarthmore College, she taught at Columbia University and the Ohio State University. Her research interests are in algebraic geometry and algebraic combinatorics, and her work has been funded by the National Science Foundation and the Simons Foundation. Dr. Chen was a program director at the National Science Foundation in the Topology and Geometric Analysis programs from 2011 to 2013.


## Alexandre Grothendieck L'enfant Terrible of $\mathbf{2 0}{ }^{\text {th }}$-Century Mathematics

 Lawrence D'Antonio Ramapo College of New JerseyWhy does the practice of mathematics often fall short of our ideals and hopes? How can the deeply human themes that drive us to do mathematics be channeled to build a more beautiful and just world in which all can truly flourish? At the Joint Meetings in January, I gave this message----that the practices of mathematics helps people flourish---no matter what they choose to do with their lives or careers. I will reprise some themes from the talk, and describe some of the reactions I've received.

Lawrence D'Antonio is Professor of Mathematics at Ramapo College of New Jersey. He has been teaching there since 1992. Besides mathematics, he likes to teach and do research in computer science and bioinformatics. His primary area of research is the history of mathematics, particularly the work of Leonhard Euler and his relationship to the Enlightenment. He is

currently writing a book on Newton's lunar theory. Besides his academic interests, Professor D'Antonio has an eclectic taste in music, ranging from jazz to punk rock. He is also a lifelong Boston Red Sox fan.

# Workshop: Effective Learning Objectives and Assessments in PreCalculus Presented by Eileen Murray and Amir H. Golnabi Montclair State University 

Abstract: This workshop will be focused on defining effective learning objectives and assessments in PreCalculus. We will demonstrate how we have connected learning objectives to assessments in our Intermediate Algebra - PreCalculus Calculus I/A course sequence. We will also discuss how we used evidence-based instructional pedagogy and practices to integrate this course sequence, and will provide an opportunity for participants to brainstorm how they could use a similar method to articulate learning objective or rethink their assessments to integrate their own courses.

Biographies of Presenters: Research has shown that teachers who participate in ongoing professional development are better situated to improve student learning and performance (Sowder, 2007; Loucks-Horsley et al., 2003). Dr. Murray believes that as a mathematics education field we need to more fully develop and understand the aspects of professional development and undergraduate education that help teachers make generative changes in their practice. Dr. Murray is uniquely positioned to tackle these issues because of her experience teaching at the middle school, high school and undergraduate levels. She has been trained as a mathematician and mathematics teacher educator and has engaged in research in several areas directly related to the preparation and professional development of teachers. Her work focuses on the overall goal of preparing and supporting secondary mathematics teachers. To better understand how to do this, Dr. Murray mainly research the content preparation of teachers through specific content courses that aim to make connections between undergraduate and secondary content. This research has taken many forms, and all of her professional endeavors can be traced back to this overarching theme.

Dr. Amir H. Golnabi is an Assistant Professor in the Department of Mathematical Sciences at Montclair State University. His research expertise is in mathematical modeling and biomedical image processing. In addition, he is very interested in undergraduate mathematics education research, specifically in implementing novel techniques to engage students in classroom, promoting deep learning, and improving students' learning experience through shifting pedagogical practices.

## Abstracts of MAA-NJ Contributed Paper Sessions

## Organizer: Theresa C. Michnowicz, New Jersey City University

## Graph Theory CCIS 212

Presiders: Amanda Beecher, Ramapo College, abeecher@ramapo.edu; Lei Cao, Georgian Court University, Icao@georgian.edu
1:30-1:45: Putting the Pieces Together: Genome Assembly Using Graph Theory, Larry D'Antonio, Idant@ramapo.edu, Ramapo College of New Jersey ABSTRACT: One of the crucial problems of biology is to reconstruct the correct DNA sequence of an organism using large numbers of shorter DNA fragments. These fragments must be compared and properly aligned. Overlapping fragments must be identified and merged. There exist two broad category of algorithms to accomplish this, both of which are based on graph theory. In this talk we give an overview of the general problem and the two types of algorithms, one of which requires finding a Hamiltonian path and the other an Euler path.

1:50-2:05: Laplacian Eigenvalue Results for Threshold Graphs and Multigraphs, John T. Saccoman, John.Saccoman2@shu.edu, Seton Hall University

ABSTRACT: A graph is a split graph if its node set can be partitioned into a clique and an independent set. A split graph $G$ is a threshold graph if, for all pairs of nodes $u$ and $v$ in $G, N(u)-\{v\} \subseteq N(v)-\{u\}$ whenever $\operatorname{deg}(u) \leq \operatorname{deg}(v)$. Threshold graphs have degree sequences that uncover some interesting properties; for example, their Laplacian spectra can be completely determined by their degree sequences. In this way, they play an important role in reliability synthesis. Since the computation of a graph's All-Terminal Reliability (ATR) is known to be intractable, it is advantageous to bound this quantity. In particular, threshold graphs are believed to bound the number of spanning trees and ATR from below for connected graphs in the same node/edge class. In this talk, we will
look at three ways to determine the number of spanning trees in a threshold graph, and present some results for multigraphs that are underlying threshold.

2:10-2:25: Tutte Polynomials and Graph Compression, Nathan Kahl, Nathan.Kahl@shu.edu, Seton Hall University

ABSTRACT: Kelmans, and independently Satyanarayana, Schoppmann, and Suffel, showed that a graph operation called the compression of a graph decreased both the number of spanning trees and the all-terminal reliability of the graph. A number of other graph parameters have since been shown to be affected by compression, including recently when Csikvari showed that compression could only decrease the magnitude of the coefficients of the graph's chromatic polynomial. In this talk we determine how compression affects the Tutte polynomial of graphs. As a result we are able to generalize all three of the previously mentioned results, as well as a number of others, and some interesting new consequences result as well.

2:30-2:45: The Roller Coaste Conjecture, Jonathan Cutler (joint work with Luke Pebody), cutlerjo@montclair.edu, Montclair State University

ABSTRACT: For a graph $G$, we let $i_{t}(G)$ be the number of independent sets in $G$ of size $t$ and we call $\left(\mathrm{i}_{\mathrm{t}}(\mathrm{G})\right)_{\mathrm{t}=0}^{\alpha(\mathrm{G})}$ the independence sequence of G . For a collection of graphs with independence number is $\alpha$, we say that the independence sequence for the collection is any-ordered on the index set $S=\left\{s_{1}, s_{2}, \ldots \ldots s_{q}\right\} \subseteq$ [ $\alpha$ ] if, for any permutation $\pi$ of $S$, there is a graph $G$ in the collection such that

$$
\mathrm{i}_{\pi\left(\mathrm{s}_{1}\right)}(\mathrm{G})<\mathrm{i}_{\pi\left(\mathrm{s}_{2}\right)}(\mathrm{G})<\cdots<\mathrm{i}_{\pi\left(\mathrm{s}_{\mathrm{q}}\right)}(\mathrm{G}) .
$$

Alavi, Erdös, Malde, and Schwenk proved that the collection of all graphs with independence number $\alpha$ is any-ordered on [ $\alpha$ ]. A graph is well-covered if every maximal independent set has the same size. Michael and Traves proved that the independence sequence of any well-covered graph is increasing on its first half. They also conjectured that for the collection of well-covered graphs with independence number $\alpha$, the independence sequence is any-ordered on $\{\lceil\alpha / 2\rceil,\lceil\alpha / 2\rceil+1, \ldots \ldots \alpha\}$. This conjecture become known as the Roller Coaster Conjecture. In this talk, we will outline a proof of this conjecture, including a graph construction that is related to well-known designs.

2:50-3:05: Hamilonian Berge Cycles in Random Hypergraphs, Deepak Bal, deepak.bal@montclair.edu, Montclair State University

ABSTRACT: An r-uniform hypergraph on $V$ is a collection of r-element subsets (i.e., `edges') of $V$ (the set of 'vertices'). A Berge cycle in a hypergraph is an alternating sequence of distinct vertices and edges ( $v_{1}, e_{1}, \ldots, v_{n}, e_{n}$ ) where $v_{i}$, $v_{i+1}$ are in $e_{i}$ for each $i$ (indices considered modulo $n$ ), and a Hamiltonian Berge cycle is one in which every vertex appears. In this talk we will discuss the threshold probability for when a random r-uniform hypergraph is likely to contain such a cycle.

## General Contributed Papers CCIS 224

Presider: Kathy Turrisi, Centenary University, kathy.turrisi@centenaryuniversity.edu

1:30-1:50: Mentoring Students through Computational Science Research Projects: Report on the iPics S-STEM grant program, Thomas R. Hagedorn, hagedorn@tcnj.edu; S. Monisha Pulimood, pullimood@tcnj.edu; The College of New Jersey

AbSTRACT: The Department of Mathematics and Statistics and the Department of Computer Science at The College of New Jersey are in the fifth year of a NSF SSTEM scholarship grant. Our program recruits and supports mathematics and computer science majors with economic need through a combination of computational science projects, advising, and community-building activities. This talk will report on our results to date.

## 1:55-2:15: Working with Work Study: Research Adventures in a Liberal Arts

Setting, Grace Cook, grace.cook@bloomfield.edu, Bloomfield College; Kyron Garnett, Creative Arts and Technology Student, Bloomfield College

ABSTRACT: For the past few years, I have utilized undergraduate work study students from a variety of majors to assist in mathematics and mathematics education research. Up to eight students have acted as tutors and/or research assistants during the fall, spring, and summer semesters. This past spring and summer we launched our first full-scale research project culminating in a poster presentation at MathFest in Denver titled "Surviving the Apocalypse with a ...continued on page 9

## MAA-NJ Fall 2018 Meeting Program

All events except lunch are in
Center for Computing and Information Science (CCIS)

| 8:30-9:30 | Registration and Coffee; CCIS $2^{\text {nd }}$ Floor Skywalk |
| :---: | :---: |
| 9:00-1:30 | Book Exhibits; CCIS $2^{\text {nd }}$ Floor Skywalk |
| 9:30-9:40 | Welcome by Lora Billings, Dean, College of Science and Mathematics; CCIS 133 |
| 9:40-10:30 | Writing Numbers as the Sum of Factorials, Suzanne Dorée, Augsburg University. Presider: Hieu D. Nguyen, Rowan University; CCIS 133 |
| 10:30-10:45 | Election and Business Meeting; CCIS 133 |
| 10:45-11:10 | Intermission and Book Exhibits; CCIS $2^{\text {nd }}$ Floor Skywalk/Lounge |
| 11:10-12:00 | Enumerative Geometry: Numbers and Beyond, Linda Chen, Swarthmore College. Presider: Thomas Hagedorn, The College of New Jersey; CCIS 133 |
| 12:00-1:30 | Lunch; Sam's Place |
| 1:30-2:45 | Workshop: Effective Learning Objectives and Assessments in PreCalculus, presented by Eileen Murray and Amir H. Golnabi, Montclair State University; CCIS 328 |
| 1:30-3:10 | Contributed Paper Sessions; Graph Theory CCIS 212; General Topics CCIS 224 |
| 1:30-2:45 | NJ-NExT; CCIS 336 |
| 3:00-3:30 | Intermission and Refreshments; CCIS $2^{\text {nd }}$ Floor Skywalk/Lounge (Silent auction bidding ends at 3:30) |
| 3:35-4:25 | Alexandre Grothendieck - L'enfant Terrible of 20 ${ }^{\text {th }}$-Century Mathematics, Lawrence D'Antonio, Ramapo College of New Jersey. Presider: Paul von Dohlen, William Paterson University; CCIS 133 |
| 4:30-5:00 | Reception; Prizes and Awards; Door prizes and silent auction winners (must be present to win); CCIS 133 |
| 5:30 | Dinner Honoring Speakers, The Noble East, 4 Alvin Place, Montclair, NJ |

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Compass and Straightedge." In this presentation, one of the work study students and I will share our experiences and journey through the last five years. We will touch upon the work study hiring process, what makes a good research assistant (no matter what major), how to organize online research, and what is appropriate mathematics research for non-math majors.

2:20-2:40: Analysis of the Candy-Sharing Game, Joseph DeGaetani, degaetanij2@mail.montclair.edu, Montclair State University

ABSTRACT: The 1962 Beijing Math Olympiad featured a problem asking test takers to prove a statement on the long-term behavior of the following "candy sharing game." The game begins with a finite number of players sitting in a circle, each with an initial amount of candy. At each time step, each player passes half of their pile to the player on their left (with odd-sized stacks receiving an extra piece of candy). The original question was whether every initial distribution of candy results in every player holding the same number of pieces after a finite number of turns. We analyze this game in the case when there are three players to determine exact formulas given the initial distribution when possible, and a tight bound on the common candy amount for a certain class of initial distributions.

## Lunch Discussion Tables

Organized by Theresa C. Michnowicz, New Jersey City University. There will be five discussion tables at lunch:

1. Undergraduate Research Projects in Graph Theory, led by Amanda Beecher, Ramapo College of New Jersey, and Lei Cao, Georgian Court University
2. Capstone Projects, led by Linda Chen, Swarthmore College
3. Using the History of Mathematics in the Classroom, led by Lawrence D'Antonio, Ramapo College of New Jersey
4. What Does a Modern Calculus Course Look Like, led by Suzanne Dorée, Augsburg University
5. Effective Learning Objectives and Assessments in PreCalculus, led by Amir Golnabi and Eileen Murray, Montclair State University

Those who pre-registered have priority at these discussion tables. We look forward to a set of lively and interesting discussions!

## Slate of Candidates for 2019 Election

Listed below are the candidates for offices that we will vote on during the Business Meeting at 10:30. Be sure to attend!

Position
Chair
Treasurer
Vice Chair for Speakers
Vice Chair for Fall Meetings
Vice Chair for Spring Meeting
Vice Chair for 2-Year Colleges

## Candidate/Affiliation

Paul von Dohlen, William Paterson University
Dirck Uptegrove, Nokia
Amanda Beecher, Ramapo College
Ik Jae Lee, Rowan University
Elizabeth Uptegrove, Felician University Jonathan Weisbrod, Rowan College at Burlington County

Vice Chair for Student Activities Deepak Bal, Montclair State University

## MathFest 2018 MAA Congress Report

The MAA Congress held an all-day meeting on August $1^{\text {st }}$ in Denver, Colorado at MathFest 2018. The Congress now meets once a year on the day before MathFest. There will be additional activities and discussions conducted electronically throughout the year.
The Congress representatives heard from MAA leadership, especially MAA President Deanna Haunsperger, Chair of MAA Congress Su Dorée, Executive Director Michael Pearson, and current and incoming MAA Deputy Executive Directors Doug Ensley and Rachel Levy about the MAA's current programs. Notable items discussed were:

- The approval of the MAA's list of core values: community, inclusivity, communications, and teaching and learning.
- The many overlapping "circles" that make up the MAA community. These include the American Mathematical Competitions, meetings, publications, and professional development.
- Ways to increase the interactions between the MAA sections and the 17 MAA SIGMAAs. Suggestions included providing information to the sections about SIGMAA membership and providing a brief introduction to each SIGMAA at section meetings.
- The MAA has a Zoom license that can be used by sections to set up communication via Zoom meetings; contact Rachel Levy for more information.
- MAA thinking on how to improve as a national organization for new career mathematicians: About one-third of the applicants for Project NExT are turned down. The Early Career Mentoring (ECM) program is a response. Sections can do this very well; no one is turned away from MAA sections.
- Programs of Note: CoMInDs (equipping faculty for the professional development of graduate student instructors), PIC Math (preparing for industrial careers in math), and StatPREP (training 2-year college instructors to use data-centered methods to teach intro stats).
- The MAA provides numerous grants and curriculum resources. Check out: https://www.maa.org/programs-and-communities
There was a standing ovation for outgoing Deputy Executive Director Doug Ensley.
There was also an extensive discussion on the list of expectations and tasks for MAA Congress representatives. The list is under development with expectations to be finished over the next year.
The MAA ended up with a budget surplus of $\$ 673,000$ in 2017 . This was due to three factors: changes in publications including a one-time influx of funds from the AMS for our book deal and ongoing income from Taylor \& Francis for journals, unexpected gift donations, and the financial wisdom of MAA staff.
There was an open mic discussion on how the Congress and the Board of Directors communicate. There were also discussions on how to include more voices on the MAA Congress. In addition to the Section Representatives and the elected MAA leadership, the MAA Congress has members appointed that represent various MAA constituencies such as the Business and Industry group, and traditionally underrepresented groups.
The members also discussed what they needed to know to be an informed member of MAA Congress and discussed plans for year-round work for the Congress.
The MAA Congress also elected officers. Jason Douma was elected Vice-Chair of the Congress and James Alvarez was elected MAA Officer-at-large. The term of

MAA Congress chair Su Dorée runs for another year, and the Congress will elect a new chair in August 2019.

Respectfully submitted,
Thomas Hagedorn,
MAA Congress Representative, New Jersey Section

## Book Sales at the Meeting

The discounted meeting price for MAA and AMS members is $40 \%$. The discount for non-members is 25\%; discounts, along with free shipping, are valid through November 27.

## Future Meetings

MAA-NJ. The Spring 2019 MAA-NJ Section meeting will be held at Raritan Valley Community College on Saturday, April 13, 2019. The Fall 2019 MAA-NJ Section meeting will be hosted by Essex County Community College, Rutgers Newark, and New Jersey Institute of Technology; the date will be posted soon on the MAA-NJ web site http://www.maa.org/newjersey

GSUMC. The Garden State Undergraduate Mathematics Conference (GSUMC) will be held in conjunction with the Spring Meeting of the NJ Section at Raritan Valley Community College. The conference will include poster and oral presentation sessions for undergraduate students, as well as a team mathematics-problem competition. There are many opportunities for faculty to participate in coorganizing the conference. Contact one of the new co-directors Deepak Bal (deepak.bal@montclair.edu), Lee Collins (collinsn@rowan.edu), or Ik Jae Lee (leei@rowan.edu) to volunteer. For additional details see the GSUMC web site: http://sections.maa.org/newjersey/GSUMC/GSUMC.htm

National MAA Meeting. The 2019 Joint Mathematics Meeting will be in Baltimore, MD, January 16 - 19.

MathFest. The 2019 MathFest will be in Cincinnati, OH, July 31 - August 3.
AMATYC. The $44^{\text {th }}$ annual conference of the American Mathematical Association of Two-Year Colleges will be in Orlando, November 15 -18, 2018.

## Call for Contributed Papers and Lunch Table Discussion Topics for the Spring 2019 MAA-NJ Meeting

There will be two special contributed paper sessions. All papers will be reviewed by the organizers. Please submit a title, three- to four-sentence abstract, and onepage description in MS Word format by January 24, 2019 to the session organizer.

1. Graph Theory and Combinatorics. Organizers: Amanda Beecher, Ramapo College of New Jersey, abeecher@ramapo.edu and Lei Cao, Georgian Court University, Icao@georgian.edu. We invite speakers to present in the broad range of topics encompassing graph theory, combinatorics, or related fields, such as combinatorial number theory or network science.
2. Recreational Mathematics. Organizer: David Nacin, William Paterson University, nacind@wpunj.edu

MAA members interested in leading a Lunch Table Discussion at the Spring 2019 meeting are asked to submit their proposals to Theresa C. Michnowicz, New Jersey City University, tmichnowicz@njcu.edu, by January 24, 2019.

## Call for Nominations for the MAA-NJ Award for Distinguished College or University Teaching

The MAA-NJ Section Distinguished Teaching Award Selection Committee is seeking nominations for the 2019 award. Please consider nominating an inspiring, respected, or influential deserving colleague for this prestigious award. A nominee must have been an MAA member for at least two years prior to the nomination. Nomination information is posted at http://www.maa.org/newjersey. For additional information you may contact Zhixiong Chen (Secretary, MAA-NJ) at zchen@njcu.edu. Nominations are due by November 20, 2018.

## Social Media Information

A message from social media director Grace Cook, Bloomfield College. Check us out!

Email: maanj.socialmedia@gmail.com
Facebook: https://www.facebook.com/maanewjersey
Instagram: https://instagram.com/maanewjersey
Twitter: https://twitter.com/maanewjersey

## MAA-NJ Committees

Awards Committee: Amy Cohen, Rutgers University; Thomas Hagedorn, The College of New Jersey; Aihua Li (ex-officio), Montclair State University; Theresa Michnowicz (chair), New Jersey City University.

Nominating Committee: Zhixiong Chen, New Jersey City University; Karen Clark, The College of New Jersey; Thomas Hagedorn (chair), The College of New Jersey; Aihua Li (ex-officio), Montclair State University; Hieu Nguyen, Rowan University.

Teaching Award Committee: Karen Clark (chair), The College of New Jersey; Aihua Li (ex-officio), Montclair State University; Dirck Uptegrove, Nokia.

Committee for Contributed Papers: Lei Cao, Georgian Court University; Grace Cook, Bloomfield College; Theresa Michnowicz (ex-officio), New Jersey City University; Kathy Turrisi (chair), Centenary University.

Organizing Committee: Amanda Beecher, Ramapo College; Zhixiong Chen, New Jersey City University; Karen Clark, The College of New Jersey; Grace Cook, Bloomfield College; Jana Gevertz, The College of New Jersey; Thomas Hagedorn, The College of New Jersey; Ik Jae Lee, Rowan University; Aihua Li, Montclair State University; Theresa C. Michnowicz, New Jersey City University; Sarita Nemani, Georgian Court University; Hieu Nguyen, Rowan University; Linda Ritchie, Centenary University; Kathy Turrisi, Centenary University; Dirck Uptegrove, Nokia; Elizabeth Uptegrove, Felician University; Paul von Dohlen, William Paterson University; Jonathan Weisbrod, Rowan College at Burlington County.

Section History Committee: Grace Cook, Bloomfield College; Larry D’Antonio, Ramapo College; Thomas Hagedorn, The College of New Jersey (chair); Aihua Li, Montclair State University; Theresa C. Michnowicz, New Jersey City University.

Hosting Committee: Deepak Bal, Joseph DeGaetani, Aihua Li (chair), Haiyan Su, Montclair State University.

Dinner Honoring the Invited Speakers. The Section will honor the invited speakers at dinner at The Noble East restaurant following the meeting. Everyone is cordially invited.

Acknowledgments. MAA-NJ thanks the Department of Mathematics at Montclair State University for their kind hospitality in hosting the meeting and in particular for providing parking at no cost to conference attendees.
We thank Jacqueline Bakal (Felician University), Cengage Learning, and Princeton University Press for their generous donations for silent auction and door prizes. We appreciate the many years that Princeton University Press has been donating books to MAA-NJ.

We thank retiring Board members Karen Clark, Sarita Nemani, and David Trubatch for their service to MAA-NJ.

NJAMTE Call for Papers. The New Jersey Association of Mathematics Teacher Educators invites contributed papers (15-25-minute talk plus 10-15-minute discussion) at its annual meeting tentatively scheduled for May 31, 2019 at The College of New Jersey. The theme is Best Practices in Teaching Mathematics. However, any talk about research results, professional development, or issues of concern to mathematics teacher educators will be considered. Proposals should be sent to mariadelucia@comcast.net by February 1, 2019. For details, see http://bit.ly/njamte or contact Maria DeLucia at mariadelucia@comcast.net.

Join the MAA! http://www.maa.org/membership/join_main.html


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