Outstanding Posters for the MAA Student Poster Session at the JMM 2018

Outstanding Posters make up the top 15% of each topical category.

Algebra

8. Completions of Noncatenary Local Domains and UFDs
   - Caitlyn Booms University of Notre Dame
   - Chloe Avery UC Santa Barbara College of Creative Studies
   - Alex Semendinger Williams College
   Advisor(s): Susan Loepp, Williams College

10. The Sortability of Graphs and Matrices Under Context Directed Swaps
   - Colby Brown University of Arizona
   - Claudia Sofia Carrillo Vazquez University of Rochester
   - Rashmika Goswami University of Michigan – Ann Arbor
   - Sam Heil Washington University in St. Louis
   Advisor(s): Marion Scheepers, Boise State University

11. Cycle Transformations and CDR — A Unifying Concept
   - Cecily Chase Brown University
   - Olivia Dennis University of Utah
   - Luke Guatelli Western Carolina University
   - Jaroor Modi Rutgers University
   Advisor(s): Marion Scheepers, Boise State University

14. Enumerating 2 x 2 and 3 x 3 Diagonalizable Matrices over \( \mathbb{Z}_{p^k} \)
   - Catherine Falvey Eastern Connecticut State University
   - Rico Vicente California State University Long Beach
   Advisor(s): Brian Sittinger, California State University Channel Islands

25. Economical Generating Sets of the Monoid of Order-Preserving Partial Permutations
   - Saul Lopez California State University Fullerton
   Advisor(s): Scott Annin, California State University Fullerton

31. Generation of 2-Generator Groups by Alternation
   - James Shade California State University, Fullerton
   - Christian Do California State University, Fullerton
   Advisor(s): Adam Glesser, California State University, Fullerton
Analysis

52. Boundary Value Problems and Green's Functions on Magnetic Graphs
   - Sawyer Robertson University of Oklahoma
   Advisor(s): Javier Alejandro Chavez-Dominguez, University of Oklahoma

54. Shift Operators on Directed Infinite Graphs
   - Elyssa Sliheet Southwestern University
   Advisor(s): Ruben Martinez-Avendao, Universidad Autonoma Del Estado De Hidalgo

Applied Mathematics

62. Quantifying the Distribution of Urban Vegetation based on Google Street View Images
   - Jacob Beihoff University of Wisconsin - Milwaukee
   - Adam Honts University of Wisconsin-Milwaukee
   Advisor(s): Istvan Lauko, University of Wisconsin-Milwaukee

67. Comparing Songs Using Matrix Pattern Preservation
   - Erin Bugbee Brown University
   - Claire Savard University of Michigan, Ann Arbor
   Advisor(s): Katherine Kinnaird, Brown University

69. Automatic Conflict Detection in Police Body Worn Video
   - Jelena Trisovic University of Belgrade
   - Collin Cademartori Brown University
   Advisor(s): Jason Xu, UCLA Department of Biomathematics

83. Optimal Investment Strategies and Portfolio Analysis of Leveraged Exchange-Traded Funds (LETFs)
   - Jalen Harris Fresno State University
   - Melanie Abel University of Maryland, College Park
   - Daniel Maes Williams College
   - Jay Iyer Washington University in St. Louis
   Advisor(s): Tao Pang, North Carolina State University

84. Scaling and City Substructure
   - Cate Heine Centre College
   Advisor(s): Ellen Swanson, Centre College

88. Math Meets Chemistry: Modeling Dicarboxylic Acids Spectra in the Infrared Region
   - Cameron Hooper California State University, Fullerton
   Advisor(s): Laura Smith, California State University, Fullerton
91. Slopes: A Graphical View of Differential Equations
   - Frederick Joubert Pepperdine University
   - Frank Garcia Pepperdine University
   Advisor(s): Timothy Lucas, Pepperdine University

106. Using Topological Data Analysis to Aid in the Effectiveness of Conservation Efforts
   - Levi Lucy North Dakota State University
   Advisor(s): Robert Allen, University of Wisconsin - La Crosse

114. A Fast-Slow Dynamical System Model of Addiction: Predicting Relapse Frequency
   - Monica McGrath Saint Mary’s College
   Advisor(s): Jacob Duncan, Saint Mary’s College

139. Estimating epidemic arrival times using linear spreading theory
   - Anne Shapiro Carleton College
   - Lawrence Chen Kansas University
   Advisor(s): Matt Holzer, George Mason University

Biomathematics

157. Modeling Fungal Community Dynamics within Chestnut Blight Cankers
   - Jesica Bauer Carroll College
   Advisor(s): Anita Baines, University of Wisconsin-La Crosse

165. A game theoretic model of mating strategies of territorial migratory songbirds
   - Kimberly Dautel Marist College
   Advisor(s): Suzanne Lenhart, University of Tennessee Knoxville

173. A Joint Model for Bivariate Longitudinal Data
   - Bridget Harris College of the Holy Cross
   Advisor(s): Shannon Stock, College of the Holy Cross

174. Name That Bird: Using Neural Networks to Classify Recorded Bird Songs
   - Russell Houpt Hope College
   Advisor(s): Darin Stephenson, Hope College

197. Evaluation of Circadian Time Series Analysis Methods Using Simulated Data
   - Alex Santos Amherst College
   Advisor(s): Tanya Leise, Amherst College
201. Land cover change shows little effect on migration patterns of Wood Storks and Great Egrets
   • Johanna Smith Drake University
     Advisor(s): Robert Allen, University of Wisconsin- LaCrosse

202. Assessing the Role of Temperature in Dengue Fever Outbreak Dynamics with Wolbachia Transinfection Control Methods.
   • Colton Smith Dixie State University
     Advisor(s): Vinodh Kumar Chellamuthu, Dixie State University

Combinatorics

207. Cluster Algebras and k-positivity Tests
   • Anna Brosowsky Cornell University
     Advisor(s): Pavlo Pylyavskyy, University of Minnesota, Minneapolis

209. The Combinatorics of the Zeckendorf Representation of the Natural Numbers
   • Dean Dustin Plymouth State University
   • Paul Lagarde Mississippi College
   • Rachel Chaiser University of Puget Sound
     Advisor(s): Tom Edgar, Pacific Lutheran University

Computational Mathematics

221. Graph Representations of Atomic Structures for Materials Data Analysis
   • Montie Avery University of New Mexico
   • Ruth Lopez California State University, Long Beach
   • Miroslav Stankovic University of Edinburgh
     Advisor(s): Jonny Dadras, University of California, Los Angeles

225. Topology of Positive Zero Sets of n-variate (n+4)-nomials
   • Sabrina Enríquez University of Southern California
   • Davina Boykin Valparaiso University
     Advisor(s): J. Maurice Rojas, Texas A&M University
Differential Equations

240. An Intuitive Approach to Solving Ordinary Differential Equations: Utilizing Derivative Formulas
   • Huy Vuong Pasadena City College
   Advisor(s): Edward Riley, Pasadena City College

Dynamical Systems

243. Continuity of Entropy for Piecewise Linear Lorenz Maps
   • Zoe Cooperband California Polytechnic State University, San Luis Obispo
   • Matt West California Polytechnic State University, San Luis Obispo
   • Blaine Quackenbush California Polytechnic State University, San Luis Obispo
   • Jordan Rowley California Polytechnic State University, San Luis Obispo
   Advisor(s): Erin Pearse, California Polytechnic State University, San Luis Obispo

Geometry

258. Most Planar Graphs do not Admit Faithful Tropicalizations in the Plane
   • Sifan Jiang Smith College
   • Desmond Coles Ohio State University
   Advisor(s): Ralph Morrison, Williams College

259. The Least-Area Tetrahedral Tile of Space
   • Arjun Kakkar Williams College
   • Alejandro Diaz University of Maryland
   Advisor(s): Frank Morgan, Williams College

262. Line Arrangements: Combinatorics vs. Topology
   • Baian Liu Vassar College
   Advisor(s): Moshe Cohen, Vassar College

269. Double Bubbles on the Real Line with Log-convex Density
   • Nat Sothanaphan Massachusetts Institute of Technology
   • Eliot Bongiovanni Michigan State University
   Advisor(s): Frank Morgan, Williams College
Graph Theory

282. Classification and Characterization of Networks
   • Emma Ingram The University of Alabama
   • Adriana Ortiz Aquino University of Puerto Rico, Rio Piedras
   • James Canning SUNY Geneseo
Advisors: Karl Schmitt, Valparaiso University

290. Reconfiguration graphs of prime labelings
   • Robert Scholle La Salle University
Advisors: Janet Fierson, La Salle University

294. Modeling DNA Self-Assembly Using Graph Theory
   • Quinn Stratton Lewis University
   • Keller Dellinger Lewis University
   • Simon Merheb Lewis University
Advisors: Amanda Harsy, Lewis University

300. The MIGHTY-est Chicken: A Graphical Investigation of Chicken Pecking Orders
   • Mikaela Wyatt Grand Valley State University
   • Ellen Grove Grand Valley State University
   • Morgan Oneka Grand Valley State University
   • Samantha Wyatt Grand Valley State University
Advisors: Lauren Keough, Grand Valley State University

Mathematical Education

302. Analyzing the Impact of Mastery-based Testing in Mathematics Courses
   • Christina Carlson Lewis University
   • Lauren Klamerus Lewis University
Advisors: Amanda Harsy, Lewis University

Number Theory

316. On Some Variations of Elliptic and Lucas Type Pseudoprimes
   • Hyun Jong Kim Massachusetts Institute of Technology
   • Brad Bentz Brown University
   • Morad Hassan Emory University
   • Andr Hernandez-Espiet University of Puerto Rico at Mayaguez
Advisors: Liljana Babinkostova, Boise State University
331. Limiting Distributions in Generalized Zeckendorf Decompositions
- Jianing Yang Colby College
- Shannon Sweitzer University of California, Riverside
- Yujin Kim Columbia University
- Eric Winsor University of Michigan, Ann Arbor
Advisor(s): Steven Miller, Williams College

Numerical Analysis

335. Radiosity Equation Model for an Interior Space Illumination Design; Mars Project
- Hien Ngo Roger Williams University
Advisor(s): Yajni Warnapala, Roger Williams University

Probability and Statistics

349. Winning Strategies in Coda
- Jack Champagne College of the Holy Cross
Advisor(s): Eric Ruggieri, College of the Holy Cross

357. Detecting Bovine Lameness Using Three-Dimensional Limb Movement Variable Analysis to Achieve High Sensitivity and Specificity
- William Dula Morehouse College
Advisor(s): Nagaraj Neerchal, University of Maryland, Baltimore County

359. Adjacent Levels in the Tridiagonal _-Hermite Ensemble
- Gopal Goel Krishna Homeschool
Advisor(s): Andrew Ahn, MIT

368. Applying the Kelly Criterion to College Football Betting
- Jamie Kunzmann Stony Brook University
- Keri D’Angelo The College of New Jersey
- Joshua Radack Lafayette College
- Quyen Do Millersville University
Advisor(s): Trent Gaugler, Lafayette College

369. A Monte Carlo measurement of Gerrymandering in Pennsylvania through random tessellation
- Benjamin Lieberman Muhlenberg College
Advisor(s): James Russell, Muhlenberg College
**Topology**

391. A first approach to a general theory of filtration functors  
- Nathaniel Clause Vanderbilt University  
- Jose Angel Sanchez Gomez University of Guanajuato  
*Advisor(s): Facundo Memoli, Ohio State University*

394. On a Generalization of the Bestvina-Brady Construction  
- Abhay Goel Kalamazoo College  
*Advisor(s): Michele Intermont, Kalamazoo College*

398. Vietoris-Rips Complexes of Regular Polygons  
- Adam Jaffe Stanford University  
*Advisor(s): Henry Adams, Colorado State University*

414. Cohomology and boundaries of relatively hyperbolic groups  
- Oliver Wang Cornell University  
*Advisor(s): Jason Manning, Cornell University*

418. Belted Sum Decomposition of Fully Augmented Links  
- Cameron Ziegler SUNY at Geneseo  
- Dean Spyropoulos Vassar College  
- Porter Morgan Kenyon College  
*Advisor(s): Rolland Trapp, California State University, San Bernardino*

**Other**

336. Building Series-Parallel Voters  
- Trung Nguyen Macalester College  
*Advisor(s): Andrew Beveridge, Macalester College*

346. Coxeter Nim: A variation on the classic mathematical game Nim to investigate the relationship between triangle Coxeter groups and Nim  
- Katherine Wu Boston University - PROMYS  
- Christianna Xu Boston University - PROMYS  
*Advisor(s): Paul Gunnells, University of Massachusetts*