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** Univerisity 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 Z_{pk}
- **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 Autnoma 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 Enriquez** 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

Advisor(s): Karl Schmitt, Valparaiso University

290. Reconfiguration graphs of prime labelings
- **Robert Scholle** La Salle University

Advisor(s): 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

Advisor(s): 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
- **Samamtha Wyatt** Grand Valley State University

Advisor(s): 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

Advisor(s): 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 Hernndez-Espiet** University of Puerto Rico at Mayagez

Advisor(s): 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 Snchez Gomez** University of Guanajuato

Advisor(s): Facundo M´emoli, 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