Outstanding Posters for the MAA Student Poster Session at the JMM 2017

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

Algebra

7. **The Sandpile Group of Thick Cycle Graphs**

- Micah Chioke Henson, Spelman College
- Jonathan Celaya, Rice University
- Diane Christine Alar, San Francisco State University

Advisor: Dr Luis Garcia Puente, Sam Houston University

9. **Factorization Properties of Int$(\mathbb{Z})$**

- Greg Knapp, Case Western Reserve University
- Jad Salem, Oberlin College
- Gabrielle Scullard, University of Rochester

Advisor: Dr Paul Baginski, Fairfield University

10. **Associated Primes of the Cover Ideals of Graphs**

- Sabrina Melinda Lato, Carthage College
- Molly Mayne Hoch, Wellesley College
- Corey Tucker Brooke, St. Olaf College
- Bryan M Wang, University of California, Berkeley

Advisor: Dr. Janet Striuli, Fairfield University

12. **Toric Mutations in the dP$_2$ Quiver and Subgraphs of the dP$_2$ Brane Tiling**

- Zhaoqi Li, Macalester College
- Thuy-Duong Vuong, Massachusetts Institute of Technology

Advisor: Associate Professor at University of Minnesota Gregg Musiker, University of Minnesota

37. **Non L_2 Low Regularity Solutions to the gMHD Equation**

- Anh Thuong Vo, Creighton University

Advisor: Dr. Nathan Pennington, Creighton University

Applied Mathematics

43. **Introducing Fractional Dynamics to Quantum Random Walks**

- Lucas Christopher Bouck, George Mason University

Advisor: Dr. Harbir Antil, George Mason University

47. **New Algorithms for Decoding Insertions in Helberg Error-Correcting Codes**

- Dane Charlton, Rowan University

Advisor: Dr. Hieu Nguyen, Rowan University

49. **Stability of Agent-based Models**

- Cassandra Cole, Brown University
- Philip Doldo, Rensselaer Polytechnic Institute
- Qing Fan, Pomona College

Advisor: Professor Bjorn Sandstede, Brown University

53. **Space Filling Curves**

- Shaquille Dixon, Coastal Carolina University

Advisor: Dr. Andrew Incognito, Coastal Carolina University

56. **Cluster With Caution**

- Craig Joseph George, University of Houston

Advisor: Professor Bernhard Bodmann, University of Houston

61. **Police Patrol Zone Realignment in Huntington, WV**

- David Benjamin Jones, Marshall University
- Sara Elysabeth Brumbaugh, Marshall University

Advisor: Dr. Michael Schroeder, Marshall University

72. **Mathematical Model to Noninvasively Detect Dry-Eye Diseases**

- Trini Nguyen, California State University Fullerton

Advisor: Mathematics Professor Charles H. Lee, California State University, Fullerton

95. **First Integrals of Elliptic Monge-Ampere Equations**

- Andrea Nicole Weaver, University of Central Arkansas

Advisor: Dr. Daniel Arrigo, University of Central Arkansas

99. **A Dynamic Model Of Protein Hydrogel Mechanics**

- Kirill Y Shmilovich, University of Wisconsin - Milwaukee

Advisor: Associate Professor Gabriella Pinter, Associate Professor of Mathematics

Biomathematics

110. **Elucidating serine richness in Arabidopsis thaliana transcript using the Exact Distribution of the Number of Clumps**

- Dustin Jovan Ford, Philander Smith College

Advisor: Dr Deidra Coleman, Philander Smith College

116. **Modeling Dermal Diffusion and Metabolism for Consumer Products**

- Megan C Hollister, Baylor University

Advisor: Dr. Marina Evans, North Carolina State University

119. **A Mathematical Model for Copper Homeostasis in \textit{Pseudomonas aeruginosa}**

- Brianna Gail Kozemzak, Saint Mary's College

Advisor: Dr. Pedro Mendes, Center for Quantitative Medicine, UConn Health

122. **Optimal Net Energy and Foragin Behavior of the Grus americana**

- Kristen Marie Lawler, Marist College

Advisor: Associate Professor John Alford, Sam Houston State University

123. **Association of Low-Frequency Variants in Regulatory Regions with Non-Syndromic Orofacial Clefts**

- Jessica Lynn LeClair, Emmanuel College

Advisor: Dr. John Shaffer, University of Pittsburgh

130. Mathematically Modeling Cancer Metastasis Through Mechanical Properties Detected By A Microfluidic Microcirculation Mimetic

- Sruti Prathivadhi, Creighton University

Advisor: Dr. Andrew Ekpenyong, Creighton University

143. Nonlinear Elastic Dynamics of Vascular Ehlers-Danlos Syndrome

- Timothy P Thorn, University of North Carolina at Asheville

Advisor: Dr. Becky Sanft, University of North Carolina at Asheville

149. Modeling growth, nutrient uptake and nitrate reductase activity in phytoplankton from a freshwater urban pond and lake. Departments of Math and Biology.

- Karl Gregory Schuchard, University of Wisconsin-Milwaukee

Advisor: Dr. Gabriella Pinter, University of Wisconsin-Milwaukee

Computational Mathematics

156. Developing Colorimetric Comparisons for Paper Analytical Devices

- Catalina Maria Vajiac, Saint Mary's College

Advisor: Dr. Ian Bentley, Saint Mary's College

Geometry

163. Generating Space-Filling Trees

- Nicholas H Nelsen, Oklahoma State University

Advisor: Assistant Professor Henry Segerman, Oklahoma State University

Graph Theory

170. Packing Colorings of Graph Products

- Catherine Ann Cooper, Trinity College

Advisor: Dr Kirsti Wash, Trinity College

173. An Exploration of Divisor Graphs and Fractional Matching Number

- Justin Andrew Groves, Winthrop University

Advisor: Dr. Arran Hamm, Winthrop University

174. **Concussion Detection using Graph Theory and Logistic Regression**

- Devika Jhunjhunwala, University of Richmond
- Shuyi Chen, University of Richmond
- Quinn McDonough, University of Richmond

Advisor: Professor Kathy Hoke, University of Richmond

178. **Domination in the Hierarchical Product and Vizing's Conjecture**

- Shriya Vedantham Nagpal, Trinity College

Advisor: DR Kirsti Wash, Trinity College

180. **Maximizing the number of homomorphisms into V_k**

- Andrew Robert Pallotto, Montclair State University
- Kevin Craig Weatherwalks, Montclair State University

Advisor: Dr. Jonathan Cutler, Montclair State University

186. **Small Graphs with Generalized Quaternion Automorphism Group**

- Lillian Webster, Grinnell College
- Kripa Khanal, University of Texas at Dallas
- Samuel Edwards, Gettysburg College

Advisor: Assistant Professor Stephen Graves, University of Texas at Tyler

Mathematical Education

191. **Cluster Analysis: A Pedagogical Investigation**

- Kallie Anna Simpson, Slippery Rock University

Advisor: Dr. Dil Singhabahu, Slippery Rock University

Number Theory

202. **Ramification of Wild Automorphisms of Laurent Series Fields**

- Kenz Kallal, Boston University - PROMYS
- Hudson Kirkpatrick, Boston University - PROMYS

Advisor: Professor Laurent Berger, École Normale Supérieure de Lyon

206. **Infinite Product Exponents for Modular Forms**

- Nitya Mani, Stanford University
- Asra Ali, MIT

Advisor: Professor Ken Ono, Emory University

207. **Anomalous Primes and the Elliptic Korselt Criterion**

- Eric Neyman, Princeton University
- Jackson Bahr, Carnegie Mellon University
- Yujin Hong Kim, Columbia University
- Gregory Kyle Taylor, College of William & Mary

Advisor: Associate Professor Liljana Babinkostova, Boise State University

Numerical Analysis

217. **A Spectral Subgradient Algorithm of Non-Smooth Optimization**

- David Hamilton Kotval, University of Tennessee at Chattanooga
- Yiting Xu, University of Washington, Bothell

Advisor: Dr. Milagros Loreto, University of Washington, Bothell

Other

222. **Completing Partial Latin Squares Arising from Latin Arrays**

- Stacie Marie Baumann, West Virginia Wesleyan College
- Kevin Akers, Concord University
- Sarah Gustafson, Davis and Elkins College

Advisor: Dr. Michael Schroeder, Marshall University

227. **Side-Channel Attacks and Countermeasure Characterization**

- Lucius Bynum, Harvey Mudd College
- Laura Daines, King's College London
- Sneha Kudugunta, Indian Institute of Technology, Hyderabad
- Tram Nghi Pham, University of California, Berkeley

Advisor: Dr. Alejandro Morales, UCLA

242. **Bijecting Recurrent Configurations on an Eulerian Digraph and its Reverse**

- Tafari Clarke James, Haverford College
- Casandra Monroe, Princeton University

Advisor: Professor Luis Garcia-Puente, Sam Houston State University

244. Chaos and Integrability in Mushroom Billiards

- Emily Christine Joslin, Baylor Universtiy
- Samuel King, Boston University
- Michael Vavala, Fairfield University

Advisor: Dr. Mark Demers, Fairfield University

247. Combinatorial Diameters and Automorphisms of Gelfand-Tsetlin Polytopes

- Benjamin Krakoff, Yale University
- Yibo Gao, Massachusetts Institute of Technology
- Lisa Lee Yang, Massachusetts Institute of Technology

Advisor: Professor Victor Reiner, University of Minnesota Twin Cities

255. Using Image Analysis and Machine Learning Techniques for Classification of Harmful Algal Blooms

- Maria Elizabeth Ruwe, Northern Kentucky University
- Rachel Nicole Zieverink, Northern Kentucky University

Advisor: Doctor Michael Waters, Northern Kentucky University

258. Quantifying CDS Sortability of Permutations Using Strategic Piles

- Meghan Shanks, Texas A&M University
- Marisa Gaetz, Massachusetts Institute of Technology
- Bethany Molokach, Western Carolina University

Advisor: Dr. Marion Scheepers, Boise State University

267. Comparing the extent to which closure methods recover the knot type of a closed knot from open subarcs

- Emily Kathleen Vecchia, University of Saint Thomas

Advisor: Dr. Eric Rawdon, University of Saint Thomas

Probability and Statistics

271. Modeling Metabolic Outcomes and Symptom Severity Based on Genetic Risk Factors in Patients with Schizophrenia: An Exploratory Use of Tree-Based Algorithms

- Grace Ware Cavanaugh, College of the Holy Cross

Advisor: Professor Shannon Stock, College of the Holy Cross

279. **Upper and lower bounds on the speed of an excited random walk**

- Owen Levin, University of Minnesota
- Jacob Smith, Franklin College

Advisor: Jonathon Peterson, Purdue University

285. **Modeling Emergency Department Arrivals using Non-Homogeneous Poisson Processes**

- Rachel Elizabeth Wagner, Coastal Carolina University

Advisor: Dr. Lindsey Bell, Coastal Carolina University

291. **Statistical Analysis of Weather Forecasts: Accuracy of Internet Weather Forecasts vs. Statistical Models**

- Yayu Zhou, University of Illinois at Urbana-Champaign
- Sijia Huo, University of Illinois at Urbana-Champaign
- Yantong Zheng, University of Illinois at Urbana-Champaign
- Yunxin Zhang, University of Illinois at Urbana-Champaign

Advisor: Professor A J Hildebrand, University of Illinois

Topology

298. **The Effect of Doubling Operators on Colorability of Knots and Links**

- Molly Mae Petersen, University of Wisconsin-Eau Claire

Advisor: Associate Professor Carolyn Otto, University of Wisconsin-Eau Claire

299. **Volume Preserving Surgeries on Hyperbolic 3-Manifolds**

- Peter Rudzis, University of Washington

Advisor: Dr. Rolland Trapp, California State University - San Bernardino