



2012 Joint Mathematics Meetings, Boston, MA  
MAA Undergraduate Student Poster Session, January 6  
Outstanding Presentations

**1. Completions of Hypersurface Domains**

Ji Won Ahn, Williams College, (Williams College REU)  
Feiqi Jiang, University of Michigan  
Giang Tran, Bard College

**2. The Noncommutative Geometry of Conway's Game of Life**

Nadine Amersi, University College London

**4. Finding Factors of Factor Rings over the Eisenstein Integers**

Valmir Bucaj, Texas Lutheran University

**14. On Li-Yorke Measurable Sensitivity**

Jared Hallett, Williams College, (Williams College REU)  
Lucas Manuelli, Princeton University

**22. Calculating Call Blocking, Preemption Probabilities and Bandwidth Utilization for Satellite Communication Systems**

Yacoub Kureh, Harvard College  
Leah Rosenbaum, Scripps College

**44. How does the effort a mother bird expends on her offspring depend on the attractiveness of her mate?**

Dana-Adriana Botesteanu, Mount Holyoke College, (NIMBios, University of Tennessee, Knoxville REU)

**47. Modeling the Effect of Diversity in Host Plant-Herbivore-Predator Interactions**

Karissa Smith, Ursinus College  
Allison Bugenis, Ursinus College

**57. Centers of Magnitude**

Thunwa Theerakarn, Brown University

**62. Discrete Models with Proportional Harvesting**

James Cameron, University of Texas at Austin, (Central Michigan University REU)  
Luis Granera Vega, Yale University  
Peter Jaworski, Central Michigan University  
Loren Santana, Skidmore College

**64. Independence polynomials of regular caterpillars**

Michaela Stone, Alfred University, (UNC-Asheville REU)  
Gregory Ferrin, Western Carolina University

**68. Optimizing Algorithm for Reliability Assessment of Radial Lifeline Systems**

Lynette Guzman, University of Arizona, (Rice University REU)

**79. The cubic formula in characteristic 3**

Dubravka Bodiřoga, Hood College, (Hood College REU)

**102. Trees Fixed by Permutations and their Applications to Tree Isomorphism Classes and Other Combinatorial Objects**

George Arzeno, MIT

**107. Characteristics of Non-Symmetric Edge Flames in Micro-Channels**

Casey McGrath, University of Redlands

**114. Achievable Radio Numbers and The Radio Number Formula**

Ben Sokolowsky, Bucknell University, (California State University-Channel Islands REU)

**116. Propagation Time for Zero Forcing of a Graph**

Shanise Walker, University of Georgia, (Iowa State University REU)

**143. Cloaking Against Thermal Imaging**

Maple So, Arizona State University, (Rose-Hulman Institute of Technology REU)

**144. Smartphone Sensors and Detecting Road Anomalies**

SaraJane Parsons, Indiana University of Pennsylvania, (Grand Valley State University REU)

Nathan Marculis, Grand Valley State University

**149. An Analytical Approach to Solving Green Oxidation Processes**

Diego Torrejon, George Mason University

**150. Modeling the Effects of the Fukushima Daiichi Nuclear Meltdown on the Marine Environment**

Bernard Lipat, New Jersey City University

Rusty Laracuenti, New Jersey City University

**154. Refining the Contour Advection with Surgery Method for 3 Dimensional Flow Analysis**

Peter Bradshaw, Arizona State University, (Arizona State University, Mathematical and Theoretical Biology Institute)

**161. Geographic Profiling through Six-Dimensional Nonparametric Density Estimation**

Austin Alleman, Santa Clara University, (Santa Clara University REU)

**179. Spatial Spread of *Wolbachia*: A Strategy to Control Dengue Fever**

Alyson Fox, Loyola University Maryland, (North Carolina State University REU)

Jared Catenacci, University of Wisconsin-Milwaukee

**181. Application of a Hill Climbing Algorithm to Parallelize Graph-based Genome Assembly**

Alexandra Gendreau, Wellesley College, (RIPS-Hong Kong REU)

August Guang, Harvey Mudd College

**185. Chaparral Population Models in Response to Wildfires**

Garrett Johns, Pepperdine University, (UCLA Applied Mathematics REU)

Wancen Jiang, Pepperdine University

Yuezhao Yang, Cal Poly Pomona

**188. Heuristic Optimal Control on Polynomial Dynamical Systems Expedited by Use of Algebraic Geometry**

Atsuya Kumano, Reed College, (Virginia Bioinformatics Institute REU)

Hussein Al-Asadi, University of Michigan

**190. A Symmetric Intraguild Predation Model for the Invasive Lionfish and Native Grouper**

Margaret-Rose Leung, Oregon State University, (Arizona State University, Mathematical and Theoretical Biology Institute)

**192. Short and Long Range Population Dynamics of the Monarch Butterfly (*Danaus plexippus*)**

Komi Messan, North Carolina A&T State University, (Arizona State University, Mathematical and Theoretical Biology Institute)

Shawn Tsosie, MIT

**201. Social Dynamics of Gang Involvement: A Mathematical Approach**

Sowmya Srinivasan, Bryn Mawr College, (Arizona State University, Mathematical and Theoretical Biology Institute)

Joshua Austin, University of Maryland, Baltimore County

Emma Smith, Linfield College

**208. A Combinatorial Approach to r-Fibonacci Numbers**

Curtis Heberle, Harvey Mudd College

**217. Binomial Type Polynomial Sequences Related to Tiling Problems**

Jonathan Schneider, MIT

**222. The Weak Bruhat Order and Separable Permutations**

Fan Wei, MIT

**230. Nevanlinna-Pick problem with Boundary Conditions: minimal norm rational solutions of low degree**

Stephen Cameron, The College of William and Mary, (The College of William and Mary REU)

**232. On Legendre Multiplier Sequences**

Katherine Urabe, California State University-Fresno, (Brigham Young University REU)

**233. Operations on Solid Angles**

Michelle Bodnar, University of Michigan, (University of Wyoming REU)

Aaron Mayerson

**235. Maximizing Volume Ratios for Shadow Covering by Tetrahedra**

Christina Chen, MIT PRIMES (Program for Research in Mathematics, Engineering and Science for High School Students)

**236. Geometry of Surfaces with Density**

Miguel Fernandez, Truman State University, (Williams College REU)

**252. Upper Bounds on the Volume of Hyperbolic, Closed 3-Braids**

Alyson Bittner, SUNY Geneseo, (California State University-San Bernardino REU)

**253. On Constructible Sets**

Tyler Bongers, Colorado State University-Pueblo, (California State University-Channel Islands REU)

Walter Morales, California State University-Bakersfield

**254.  $\Gamma$ -Euler-Satake Characteristics of Non-Orientable 3-Orbifolds**

Ryan Carroll, Rhodes College

**255. Orbifolds and Buildings**

Samir Chowdhury, Tufts University

**258. Characterizing Moves in Hexagonal Regions of Hextile Knot Mosaics**

Andreana Holowatyj, Victoria University (Wellington, New Zealand)

**259. Virtual Birack Shadow Modules and their Link Invariants**

Nicole Sanderson, University of California, Davis, (Claremont Colleges REU)

**275. The Best Mixing Time on Trees**

Jeanmarie Youngblood, Macalester College

**278. Domination and Independence on the Triangular Honeycomb Chessboard**

Hong Lien Tran, Kennesaw State University

**305. Which Rotor-Routers are Universal?**

Xiaoyu He, Acton-Boxborough Regional High School

**312. Yelling in Circles: A Generalization of the Game "Look Up and Scream"**

Sarah Warkentin, Harvey Mudd College, (East Tennessee State University REU)

Lucia Petito, University of Rochester