Amelia Gibbs

Email: tgibbs (at) trinity (dot) edu

Education

Trinity University   San Antonio, TX
B.A. in Mathematics   Anticipated Completion: May 2025

Research Experience

Trinity University   San Antonio, TX
Research Assistant; Advisor: Hoa Nguyen   Summer 2023
Optimized the method of images for regularized Stokeslets using theoretical and experimental
results of spherical motion near a boundary

- Simulated spherical motion near a boundary at low Reynolds number with the method of images for regularized Stokeslets in MATLAB

- Developed approximations for optimal numerical parameters of various regularization functions from simulation data

University of Michigan - Dearborn   Dearborn, MI
Research Assistant; Advisor: Kelly Jabbusch   Summer 2024
Worked jointly with three other undergraduates to study error-correcting codes from toric varieties
and geometric invariants of lattice polytopes

- Developed a new method for computing the minimum distance of toric codes associated to certain classes of lattice polygons

- Proved results regarding the affects of polytope operations on the Minkowski Length, a geometric invariant, of a lattice polytope

Publications

Submitted

- Hoa Nguyen, Amelia Gibbs, Frank Healy, Orrin Shindell, Ricardo Cortez, Kate Brown, Jonathan McCoy, and Bruce Rodenborn. "Optimizing the Method of Images for Regularized Stokeslets Using Theory and Experiments of Spheres Moving near Boundaries." arXiv, February 17, 2024. arXiv:2401.16214.

- Amelia Gibbs, Brian Miceli. "Two Combinatorial Interpretations of Rascal Numbers." arXiv, May 17, 2024. arXiv:2405.11045

Presentations

- "Calibration of the method of images for regularized Stokeslets using sphere motion near a boundary," APS Division of Fluid Dynamics 76th Annual Meeting, November 2023, Washington DC, Poster Presentation.

- "Two Combinatorial Interpretations of Rascal Numbers," CombinaTexas, March 2024, Texas A&M University, Contributed Talk.

- "Toric Surface Codes and the Periodicity of Polytopes," SUMMR, July 2024, Michigan State University, Contributed Talk, Presented Jointly.

Upcoming

- "Toric Surface Codes and the Periodicity of Polytopes," Young Mathematicians Conference, August 2024, Ohio State University, Contributed Talk, Presented Jointly.

- "A Combinatorial Proof of Schläfli's Identity and Gould's Identity," AMS Fall 2024 Central Sectional Meeting, September 2024, University of Texas - San Antonio, Invited Talk.

Awards

Junior Mathematics Award   2024
Honors award given by Trinity University to an outstanding student in the math department

Teaching Experience

Trinity University   San Antonio, TX
Teaching Assistant   2023-Present

- TA for Combinatorics (Math 3343)   Present
- TA for Modern Algebra (Math 3362)   Spring 2024
- TA for Applied Linear Algebra (Math 3319)   Fall 2023
- TA for Linear Algebra (Math 3323)   Spring 2023

References

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