

# RESEARCH EXPERIENCE FOR UNDERGRADUATES IN MATHEMATICS

## UNDERGRADUATE RESEARCH FELLOWSHIP OPPORTUNITY

Fellowship recipients will become active collaborators with faculty members at Grand Valley State University, conducting original research in mathematics while developing their mathematical communication skills. Past student projects have resulted in publications in professional journals and award-winning presentations at state and national conferences.

## PROGRAM INFORMATION

### DATES

Sunday, June 12 to Sunday, August 7, 2016

### ELIGIBILITY

Must be a citizen or permanent resident of the U.S. or its possessions, current full-time or part-time undergraduate, and have completed one full year of calculus and one course in linear algebra.

### SETTING

Beautiful summertime in West Michigan!

### SUPPORT

\$4,000 research stipend, on-campus air-conditioned housing with your own bedroom, and a generous food allowance.

### APPLICATION DEADLINE

Applications received by Friday, February 19, 2016 will receive full consideration. Review of applications will continue until all positions are filled. Applicants will be notified of their acceptance by the end of March.

*We particularly welcome applications from students belonging to groups traditionally underrepresented in mathematics.*

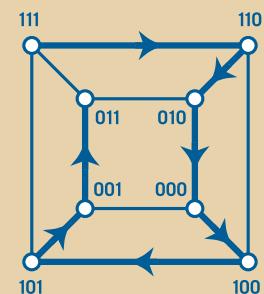
*This REU is funded in part by pending grants from the National Science Foundation and the National Security Agency. All projects for the 2016 program are contingent upon funding.*

## SUMMER RESEARCH TOPICS



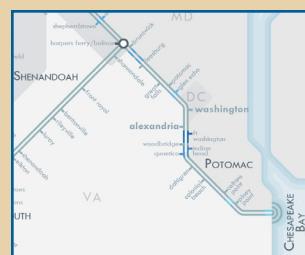
### LOTTERY VOTING

Can randomness lead to better representation?



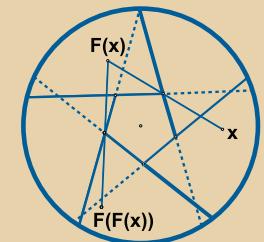
### GRAPHS AND ELECTION SIMULATION

Use graphs to simulate diverse electorates in referendum elections.



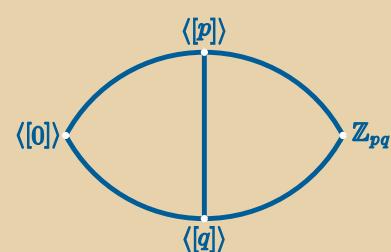
### BIG DATA ANALYSIS AND VISUALIZATION

Solve applied mathematics problems that involve large data sets and creative visualizations.



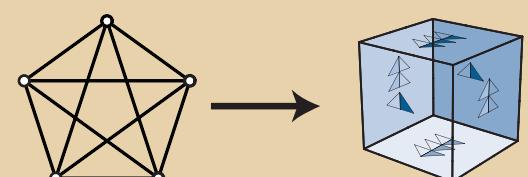
### OUTER BILLIARDS

Explore fundamental domains of outer billiard maps in the hyperbolic plane and/or Euclidean plane.



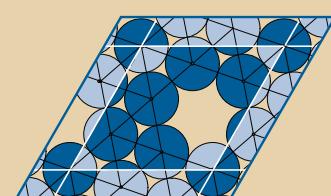
### GEOMETRY AND GROUPS

Create and classify finite geometries from finite groups.



### GRAPH EMBEDDINGS

Enumerate the embeddings of graphs into a flat three-torus.



### EQUAL CIRCLE PACKING

Find and prove the optimality of dense arrangements of circles on tori or Klein bottles.

## FOR MORE INFORMATION

**APPLY:** Online at [www.gvsu.edu/mathreu](http://www.gvsu.edu/mathreu)

**EMAIL:** Jonathan Hodge, Ph.D., at [hodgejo@gvsu.edu](mailto:hodgejo@gvsu.edu)

[www.gvsu.edu/mathreu](http://www.gvsu.edu/mathreu)



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