

# RESEARCH EXPERIENCE FOR UNDERGRADUATES IN MATHEMATICS

## UNDERGRADUATE RESEARCH FELLOWSHIP OPPORTUNITY

Fellowship recipients actively collaborate 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 4 to Sunday, July 30, 2017

#### *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 in air-conditioned housing with your own bedroom, and a generous food allowance.

#### *Application Deadline*

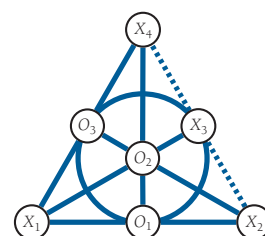
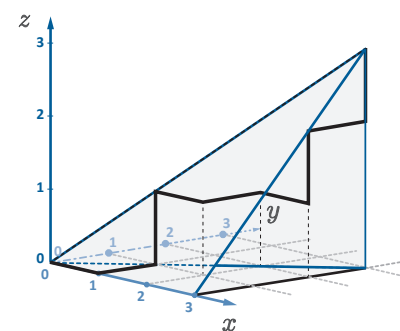
Applications received by Friday, February 17, 2017 will receive full consideration. Review of applications will continue until all positions are filled. Applicants will be notified of their acceptance by the end of March.

*The Grand Valley State University Summer Mathematics REU is funded in part by a pending grant from the National Science Foundation. All projects for the 2017 program are contingent upon funding.*

### SUMMER RESEARCH TOPICS

#### GENERALIZED CATALAN NUMBERS

Develop and prove combinatorial bijections between sets counted by the generalized Catalan numbers.

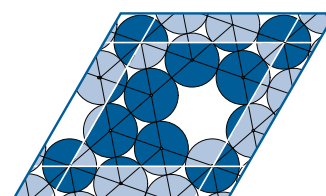
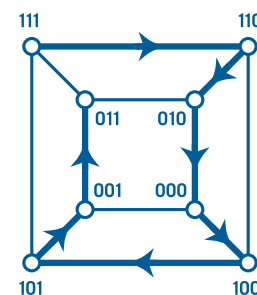


#### ANTI-GAMES ON STEINER TRIPLE SYSTEMS

Explore games played on combinatorial designs where the winner is the last to lose.

#### GRAPHS AND ELECTION SIMULATION

Use graphs to simulate diverse electorates in referendum elections.



#### EQUAL CIRCLE PACKING

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

### FOR MORE INFORMATION

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

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

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



GRAND VALLEY  
STATE UNIVERSITY  
DEPARTMENT OF MATHEMATICS