The Math/Stats Colloquium
Department of Mathematics and Statistics
San José State University

Ethan Berkove

Lafayette Coll. (visiting U.S. Air Force Academy)

Shortest Paths through the Sierpinski Carpet, Menger Sponge, and Beyond

April 25, 2018, MH320

Abstract: The Sierpinski carpet and Menger sponge are fractals that are 2- and 3-dimensional versions of the Cantor set. Like the Cantor set, each is formed by starting with a shape (a square for the carpet, a cube for the sponge) and then recursively removing from it certain subsets. Unlike the Cantor set, given any two points s and f in the carpet or sponge, there is a path from s to f that stays in the carpet or sponge. In this talk, we'll discuss what we know about the shortest paths from s to f in the carpet, sponge, and higher dimensional versions of these fractals. The proofs required a surprising (at least to us) breadth of techniques, from combinatorics, geometry, and even linear programming. (Joint w/ Derek Smith.)

Background: One class in proofs (i.e., Math 108).

About the speaker: Ethan Berkove earned his Ph.D. from U. Wisconsin, Madison, and his research interests have included group cohomology and algebraic K-theory. More recently, he's developed side interests in recreational mathematics and the mathematics of origami.

Snacks in MH331B at 2:30 pm
Talk starts at 3:00 pm

For more information, see our full schedule at:

`http://www.math.sjsu.edu/~hsu/colloq/`