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*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/