



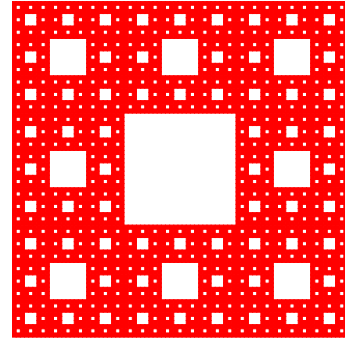
The Math/Stats Colloquium  
Department of Mathematics and Statistics  
San José State University



**Derek Smith**  
Lafayette College

*Short Paths in Generalizations  
of the Sierpiński Carpet*

NOV 17, 2021, VIA ZOOM



**Abstract:** The image above (the one without the lemur) is an approximation of the Sierpiński carpet, which is the limit of the process of removing smaller and smaller square holes according to the same regular pattern. The Sierpiński carpet contains vertical and horizontal line segments, and it also contains line segments of several other slopes — can you find some of them? In this talk we'll try to find shortest paths between two points in the Sierpiński carpet and in a family of fractals that generalize it, including the 3-dimensional Menger sponge. This work is joint work with Ethan Berkove and Elene Karangozishvili.

*Background:* Some experience with proofs (e.g., Math 108).

**About the speaker:** Derek Smith is a Professor at Lafayette College with research interests in algebra and geometry, including recent projects in graph theory, fractal geometry, and non-associative algebra. He is the author of the books *On Quaternions and Octonions* (with John H. Conway) and *Exploring Mathematics: An Engaging Introduction to Proof* (with John Meier).

COLLOQUIUM BROADCAST VIA ZOOM, 4:15PM PACIFIC

EMAIL [tim.hsu@sjsu.edu](mailto:tim.hsu@sjsu.edu) FOR AN INVITATION

For our full schedule, see: <http://www.timhsu.net/colloq/>