Speaker: Bob Strichartz, Cornell

Title: Spectral Theory of Laplacians on Manifolds, Graphs and Fractals

Abstract:

I will talk about Laplacians in 3 different contexts: manifolds (including regions in Euclidean space), graphs, and fractals. I will show how these are all connected. I will concentrate on fractals, and as usual for a fractal talk there will be many nice pictures. I will discussed some heuristics, including a spectral segmentation principle that relates segments of the spectrum of the Laplacian with geometry on different scales. I will discuss some experiments that lead to theorems and conjectures. The terms "context", "heuristic", and "experiment" are not ones that usually come up in a math talk, so one of the purposes of my talk is to convince you that they are in fact useful ideas for mathematics.