1021-26-171 **Marya Bessonov** (mybesson@ncsu.edu), Mathematics Department, North Carolina State University, Raleigh, NC 27695, **Michael Jennings** (mvj3@cornell.edu), Mathematics Department, Malott Hall, Cornell University, Ithaca, NY 14853, **Robyn L Miller*** (rmiller@math.cornell.edu), Mathematics Department, Malott Hall, Cornell University, Ithaca, NY 14853, and **Robert S Strichartz** (str@math.cornell.edu), Mathematics Department, Malott Hall, Cornell University, Ithaca, NY 14853. *What Happens to the Spectrum When You Perturb a Fractal Graph?*

We study the change in the spectrum of the Laplacian on a graph approximation to the Sierpinski gasket as we perturb the graph. We arrange that all graphs we study are 4-regular, so all notions of "spectrum" essentially coincide. We report experimental results that show a steady degradation of the spectrum toward that of a random 4-regular graph, with no "phase transitions", but aspects of the spectrum persist even after 50% of the edges have been perturbed. Other features of the spectrum, in particular the large spectral gaps and high multiplicities, degrade more rapidly. (Received September 04, 2006)