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Tyrus Berry, Stacey Goff and **Robert S Strichartz*** (str@math.cornell.edu), Math Dept,
Malott Hall, Ithaca, NY 14853. *Outer approximation: a new approach to studying fractal
Laplacians.* Preliminary report.

Let K be a fractal embedded in the plane. Consider a sequence of connected domains in the plane whose closures approximate K . The sequence of Neumann Laplacians on the domains may be considered as approximating a fractal Laplacian, with the spectra of the domain Laplacians approximating the spectrum of the fractal Laplacian, in terms of eigenvalues (properly renormalized) and eigenfunctions. We present experimental evidence that this approach is valid: in the case of the interval or the standard Laplacian on SG, it yields the correct spectrum. We also present experimental results concerning the spectrum on SC, where existence (but not uniqueness) of a fractal Laplacian is known, and the octagasket, where existence of a fractal Laplacian is not known. (Received August 31, 2006)