1021-28-117 **Edward Fan** and **Zuhair Khandker*** (khandker@princeton.edu), Math Dept, Fine Hall, Princeton University, Princeton, NJ 08544, and **Robert S Strichartz**. *Analogs of the quantum mechanical harmonic oscillator on the Sierpinski gasket.* Preliminary report.

The harmonic oscillator is one of the simplest QM models that can be completely understood, since its eigenfunctions are just the Hermite functions. We are interested in fractal analogs, where the underlying space is an infinite blowup of SG with the standard Kigami Laplacian. We want to use a potential with the following properties: 1) its Laplacian is constant (chosen to be 1); 2) it attains a minimum value of 0; 3) it tends to infinity at infinity. We have a parametrization of all such potentials as a surface in 3-space, a Dirichlt-to-Neumann map for boundary values, and results on the rate of growth at infinity. We have numerical data on eigenfunctions and eigenvalues, including pictures of the groundstate, which has a resemblance to a Gaussian. We also have a weak Weyl law for the asymptotics of the eigenvalues. (Received August 31, 2006)