1072-58-234 **Naotaka Kajino*** (nkajino@math.uni-bielefeld.de), Department of Mathematics, University of Bielefeld, Postfach 10 01 31, 33501 Bielefeld, Germany. *Weyl's Laplacian eigenvalue asymptotics for the measurable Riemannian structure on the Sierpinski gasket.*

On the Sierpinski gasket K, Kigami [Math. Ann. 340 (2008)] has introduced the notion of the measurable Riemannian structure, with which the gradient vector fields of functions, the Riemannian volume measure μ and the geodesic metric ρ are naturally associated. Kigami has also proved in the same paper the two-sided Gaussian bound for the corresponding heat kernel, and I have further shown several detailed heat kernel asymptotics, such as Varadhan's asymptotic relation, in a recent paper [Potential Anal., in press].

In the talk, the Weyl's Laplacian eigenvalue asymptotics is presented for this case. Specifically, let d be the Hausdorff dimension of K and $\mathcal{H}^d$ the d-dimensional Hausdorff measure on K, both with respect to ρ. Then for some $c_N > 0$ and for any $U \subset K$ non-empty open with $\mathcal{H}^d(\partial U) = 0$,

$$\lim_{\lambda \to \infty} \frac{N_U(\lambda)}{\lambda^{d/2}} = c_N \mathcal{H}^d(U),$$

where $N_U(\lambda)$ is the number of the eigenvalues, less than or equal to λ, of the Dirichlet Laplacian on U. Moreover, we will also see that $\mathcal{H}^d$ is Ahlfors d-regular with respect to ρ but that it is singular to the Riemannian volume measure μ. (Received June 28, 2011)