1096-49-295 **Nicholas Ryder*** (nick.ryder@rice.edu), 1601 Rice Blvd, Houston, TX 77005, Plano, TX 77005, and **Pak Hin Li**, **Baris Evren Ugurcan** and **Robert S. Strichartz**. *Extensions and their Minimizations on the Sierpinski Gasket.*

We study the extension problem on the Sierpinski Gasket (SG). In the first part we consider minimizing the functional $\mathcal{E}_\lambda(f) = \mathcal{E}(f,f) + \lambda \int f^2 d\mu$ with prescribed values at a finite set of points where $\mathcal{E}$ denotes the energy (the analog of $\int |\nabla f|^2$ in Euclidean space) and μ denotes the standard self-similiar measure on SG. We explicitly construct the minimizer $f(x) = \sum_i c_i G_\lambda(x_i, x)$ for some constants c_i, where G_λ is the resolvent for $\lambda \geq 0$. We minimize the energy over sets in SG by calculating the explicit quadratic form $\mathcal{E}(f)$ of the minimizer f. We consider properties of this quadratic form for arbitrary sets and then analyze some specific sets. One such set we consider is the bottom row of a graph approximation of SG. We describe both the quadratic form and a discretized form in terms of Haar functions which corresponds to the continuous result established in a previous paper. We study a similar problem this time minimizing $\int_{SG} |\Delta f(x)|^2 d\mu(x)$ for general measures. In both cases, by using standard methods we show the existence and uniqueness to the minimization problem. We then study properties of the unique minimizers. (Received August 27, 2013)