1145-41-568   **Shiping Cao*** (`sc2873@cornell.edu`), Malott Hall, room 105, Cornell University, Ithaca, NY 14853, and **Hua Qiu** (`huaqiu@nju.edu.cn`), Nanjing, Jiangsu 210093, Peoples Rep of China.
Boundary value problems on domains in Sierpinski gaskets.

We study boundary value problems for the Laplacians on subdomains of the Sierpinski gaskets. First, we consider the left half Ω of the Sierpinski gasket $\mathcal{SG}$, whose boundary X is a countable set. For a two-parameter family of Laplacians on $\mathcal{SG}$ that are symmetric and self-similar, we give an explicit analogue of the Poisson integral formula to recover harmonic functions on Ω from their boundary values on X, and characterize functions of finite energy in terms of boundary values. We investigate the exact trace spaces on X of the L^2 and L^∞ domains of the Laplacians on $\mathcal{SG}$, and extend the trace result to general Sobolev type spaces $L^2_\sigma(\mathcal{SG})$. A consistent form of the trace spaces for real order σ is given. Second, we extend the consideration to certain subdomains in the level-l Sierpinski gaskets $\mathcal{SG}_l(l \geq 2)$ whose boundaries are discrete sets or Cantor sets. Three types of domains, the left half of $\mathcal{SG}_l$ and the upper and lower parts generated by horizontal cuts of $\mathcal{SG}_l$ are considered at present. We show that the arguments for Dirichlet problems for harmonic functions can be extended to these domains. (Received September 10, 2018)