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Boundary Value Problems on a Half Sierpinski Gasket.

This paper studies the fractal analogue of classical half-space boundary value problems for harmonic functions. We give the explicit formula for continuous solutions and the formula for the unique solution which extends continuously to the boundary. This unique continuous solution has well behaved properties, such as a simple energy estimate and an invertible Dirichlet to Neumann map. Finally, we give sufficient conditions for extending harmonic functions on the half space to biharmonic functions on the whole space and a partial converse to the extension conditions. (Received September 24, 2012)