

Existence of solution to a Dirichlet elliptic problem on the Sierpiński gasket

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Abstract

We study the existence of a weak (strong) solution of the nonlinear elliptic problem
$$-\Delta u - \lambda u g_1 + h(u) g_2 = f \quad \text{in } V \setminus \text{setminus } V_0, \quad u = 0 \quad \text{on } V_0,$$
 where V is the Sierpiński gasket in $\mathbb{R}^{N-1}$ ($N \geq 2$), V_0 is its boundary (consisting of its N corners) and λ is a real parameter. Here, $f, g_1, g_2: V \rightarrow \mathbb{R}$, $h: \mathbb{R} \rightarrow \mathbb{R}$ are functions satisfying suitable hypotheses.

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