

Hausdorff dimension of functions on d -sets

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Abstract

The sharp upper bound for the Hausdorff dimension of the graphs of the functions in Hölder and Besov spaces (in this case with integrability $p \geq 1$) on fractal d -sets is obtained: $\min\{d + 1 - s, d/s\}$, where $s \in (0, 1]$ denotes the smoothness parameter. In particular, when passing from $d \geq s$ to $d < s$ there is a change of behaviour from $d + 1 - s$ to d/s which implies that even highly nonsmooth functions defined on cubes in \mathbb{R}^n have not so rough graphs when restricted to, say, *rarefied* fractals.