1067-35-259   **Emily J Evans*** (`montu@wpi.edu`), WPI/ Math Department, 100 Institute Rd., Worcester, MA 01752. *A Finite Element Approach to C^β Extension using Prefractals.*

We extend a function u defined on a fractal set S which satisfies the Hölder estimate

$$|u(x) - u(y)| \leq C_0 |x - y|^\beta$$

for all x, y on S, to a larger domain $\Omega \subseteq \mathbb{R}^2$. The extension function u^* is defined everywhere in Ω, is Hölder continuous everywhere in Ω, corresponds with u at every point on S and satisfies the estimate $|u^*|_{\overline{\Omega}, \beta} \leq C \|u\|_{S, \beta}$ with a constant C independent of u. Our approach is different and more constructive then the standard approach and exploits both the self-similarity of the fractal as well as the iterative process used to define the fractal set. (Received August 13, 2010)

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