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Complex Powers of the Laplacian on Affine Nested Fractals as Calderón-Zygmund operators.

We give the first natural examples of Calderón-Zygmund operators in the theory of analysis on post-critically finite self-similar fractals. This is achieved by showing that the purely imaginary Riesz and Bessel potentials on nested fractals with 3 or more boundary points are of this type. It follows that these operators are bounded on L^p , $1 < p < \infty$ and satisfy weak 1-1 bounds. The analysis may be extended to infinite blow-ups of these fractals, and to product spaces based on the fractal or its blow-up. (Received August 04, 2010)