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**Marius V Ionescu\*** (mionescu@colgate.edu), 13 Oak Dr, Hamilton, NY 13346, and **Luke G Rogers** and **Robert S Strichartz**. *Pseudo-differential operators on fractals*.

Abstract. We define and study pseudo-differential operators on a class of fractals that include the so called post-critically finite self-similar sets and Sierpinski carpets. Using the sub-Gaussian estimates of the heat operator we prove that our operators have kernels that decay and, in the constant coefficient case, are smooth off the diagonal. Our analysis can be extended to product of fractals. While our results are applicable to a larger class of metric measure spaces with Neumann Laplacian, we apply them to study elliptic, hypoelliptic, and quasi-elliptic operators on p.c.f. fractals, answering a few open questions posted in a series of recent papers. We extend our class of operators to include the so called Hörmander elliptic operators. We also initiate the study of wavefront sets and microlocal analysis on p.c.f. fractals. (Received May 24, 2011)