

1086-28-366

Rolando de Santiago, Michel L. Lapidus, Scott A. Roby and John A. Rock*

(jarock@csupomona.edu), Department of Mathematics and Statistics, Cal Poly Pomona, 3801 W Temple Ave, Pomona, CA 91768. *Scaling multifractal spectra of self-similar measures.*

The multifractal structure underlying a self-similar measure stems directly from the weighted self-similar system (or weighted iterated function system) which is used to construct the measure. This follows much in the way that the dimension of a self-similar set, be it the Hausdorff, Minkowski, or similarity dimension, is determined by the scaling ratios of the corresponding self-similar system via Moran's theorem. The multifractal structure of a self-similar measure allows for our definition of scaling regularity, scaling zeta functions, and scaling multifractal spectrum motivated by geometric zeta functions of fractal strings and, in particular, partition zeta functions of self-similar measures. In this talk, we discuss a key result regarding the abscissae of convergence of the scaling zeta functions of certain self-similar measures. In various cases, we recover the Moran equation associated with a given self-similar system, the Hausdorff multifractal spectrum, and the Hausdorff dimensions of Besicovitch subsets. (Received September 25, 2012)