

Wednesday, September 19th, 16:00
BCAM Seminar room

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SELF-SIMILAR MEASURES: ASYMPTOTIC BOUNDS FOR THE DIMENSION AND FOURIER DECAY OF SMOOTH IMAGES

R. Kaufman and M. Tsujii proved that the Fourier transform of self-similar measures has a power decay outside of a sparse set of frequencies. We present a version of this result for homogeneous self-similar measures, with quantitative estimates, and derive several applications: (1) non-linear smooth images of homogeneous self-similar measures have a power Fourier decay, (2) convolving with a homogeneous self-similar measure increases correlation dimension by a quantitative amount, (3) the dimension and Frostman exponent of (biased) Bernoulli convolutions tend to 1 as the contraction ratio tends to 1 , at an explicit quantitative rate.