

NORMALIZATION OF LOW TEMPERATURE AND CRITICAL
MANDELBROT CASCADES

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We consider a family of random measures whose density with respect to the Lebesgue measure is given by an exponential of a hierarchical approximation to the massless Gaussian field (with some cutoff). Such measures are called Mandelbrot (multiplicative) cascades. We prove detailed asymptotics for the probability distribution of the partition function (total mass) which shows the existence of a phase transition in the model. Combined with recent results of Barral, Rhodes and Vargas our results extend to the random measures themselves.