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Partition zeta functions of self-similar measures.

For an Iterated Function System (IFS) on the unit interval weighted by a probability vector we define a multifractal spectrum for the self-similar Borel measure uniquely determined by the weighted IFS as the abscissae of convergence of its partition zeta functions. Partition zeta functions are Dirichlet series determined by the self-similar Borel measure and a naturally defined sequence of partitions. These partition zeta functions are indexed by coarse Holder regularity and we show that the corresponding abscissae of convergence equal the Hausdorff dimension of corresponding Besicovitch subsets of the support of the measure. In the case of the binomial measure, for instance, the classical Hausdorff multifractal spectrum is recovered. (Received July 01, 2010)