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Sofic dimension for measured groupoids

The notion of soficity for discrete groups was introduced by Gromov as an external finite approximation property that simultaneously generalizes amenability and residual finiteness. One can also apply this concept more generally to probability-measure-preserving groupoids. In this context we define an invariant which measures the asymptotic growth of the number of sofic models and can be viewed as a discrete analogue of free entropy dimension. The value of this sofic dimension is realized on any generating set, which renders it accessible to computation and enables us to establish free product formulas. We thereby obtain a combinatorial approach to the study of orbit equivalence for measure-preserving actions that complements the theory of cost. This is joint work with Ken Dykema and Mikael Pichot.