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Numerical and other classification of approximately transitive Z-actions

Using the notion, developed by Thierry Giordano and me, of a measure-theoretic version of a dimension group (originally used in the classification of AF C^*-algebras), criteria for isomorphism and non-isomorphism of actions of the title, or equivalently of their corresponding integer-valued random walks, are given. The best of these is in terms of numerical invariants; for example, if g_n is the Poisson (distribution) of variance $N(n)$ supported on the lattice $2^{k(n)}Z$ (a typical class of sequences in this context), then a sufficient condition for the RW given by the sequence g_n to be equivalent to its tensor square is that an explicit sum associated to the data converge, and this is likely close to being necessary (although it is known not to be necessary). Methods are pseudo-probabilistic.