

# Nearly approximate transitivity (AT) for circulant matrices

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*Abstract.* By previous work of Giordano and the author, ergodic actions of  $\mathbf{Z}$  (and other discrete groups) are completely classified measure-theoretically by their dimension space, a construction analogous to the dimension group used in  $C^*$ -algebras and topological dynamics. Here we investigate how far from AT (approximately transitive) can actions be which derive from circulant (and related) matrices. It turns out not very: although non-AT actions can arise from this method of construction, under very modest additional conditions, ATness arises; in addition, if we drop the positivity requirement in the isomorphism of dimension spaces, then all these ergodic actions satisfy an analogue of AT. Many examples are provided.