

Power Weakly Mixing Transformations

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Abstract

It follows from Furstenberg's proof of the multiple recurrence theorem that a weakly mixing, invertible, probability preserving transformation $T : (X, P) \rightarrow (X, P)$ satisfies that for every finite sequence $n_1, \dots, n_k \in \mathbb{Z} \setminus \{0\}$,

$$T^{n_1} \times T^{n_2} \times \dots \times T^{n_k}$$

is an ergodic measure preserving transformation of X^k . A transformation satisfying the latter property is called "power weakly mixing". We will survey some history around this property in the non probability preserving case and show constructions of a power weakly mixing, infinite measure preserving markovian \mathbb{R} -flows and a power weakly mixing non singular Bernoulli shift without an invariant P -equivalent σ -finite measure.