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Title : Quantitative recurrence for T, T^{-1} -transformations

Abstract :

We are interested in the study of return times in a small neighbourhood of the origin. for the T, T^{-1} -transformation defined from two mixing subshifts of finite type. This transformation is famous for being a natural example of K -automorphism which is not weakly Bernoulli. For this system, we exhibit different possible normalizations and the three following possible limits depending on the respective measure dimensions of the underlying subshifts of finite type :

- a Poisson process (as for the direct product of the two subshifts of finite type) if the dimension of the first system is the largest
- a Poisson evaluated at the local time at 0 of a Brownian motion (as for the Z -extension of the first subshift of finite type) if the dimension of the second system is the largest
- and, if the two dimensions are equal : a sum of independent Poisson processes taken at local times of a Brownian motion at sites given by a Poisson process, with possibly random parameters (depending on whether both measures are of maximal entropy or not)

This is a joint work with Benoît Saussol.