

Abstract: I will describe an example of a C^∞ volume preserving topologically transitive diffeomorphism of a compact smooth Riemannian manifold which is ergodic (indeed is Bernoulli) on an open and dense subset U of not full measure and has zero Lyapunov exponent on the complement of U . I will also discuss a continuous-time version of this example.

These constructions provide examples of "complete" KAM picture in the volume preserving category (in both discrete and continuous-time): the system has a Cantor set of positive volume of invariant tori (where it acts as a translation or is simply the identity) surrounded by chaotic sea where the system is ergodic (indeed is Bernoulli) and has nonzero Lyapunov exponents almost everywhere.