CONSERVATIVE ANOSOV DIFFEOMORPHISMS OF THE TWO TORUS WITHOUT AN ABSOLUTELY CONTINUOUS INVARIANT MEASURE

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Abstract: Markov partitions introduced by Sinai and Adler and Weiss are a tool that enables transferring questions about ergodic theory of Anosov Diffeomorphisms into questions about Topological Markov Shifts and Markov Chains. This talk will be about a reverse reasoning, that gives a construction of C^1 conservative (satisfy Poincare's recurrence) Anosov Diffeomorphism of $\mathbb{T}^2$ without a Lebesgue absolutely continuous invariant measure. Moreover these transformations are of stable (Krieger) type III_1 which means that for any ergodic probability preserving transformation $(Y, \mathcal{C}, \nu, S)$, the cartesian square $f \times S$ is a type III_1 transformation of $\left(\mathbb{T}^2 \times Y, Leb_{\mathbb{T}^2} \times \nu \right)$. By a theorem of Gurevic and Oseledec, this can't happen if the map is $C^{1+\alpha}$ with $\alpha > 0$, Anosov and recurrent.