

Robust Criterion for the Existence of Nonhyperbolic Ergodic Measures

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Abstract

We give explicit C^1 -open conditions that ensure that a diffeomorphism possesses a nonhyperbolic ergodic measure with positive entropy. Actually, our criterion provides the existence of a partially hyperbolic compact set with one-dimensional center and positive topological entropy on which the center Lyapunov exponent vanishes uniformly. The conditions of the criterion are met on a C^1 -dense and open subset of the set of diffeomorphisms having a robust cycle. As a corollary, there exists a C^1 -open and dense subset of the set of non-Anosov robustly transitive diffeomorphisms consisting of systems with nonhyperbolic ergodic measures with positive entropy. The criterion is based on a notion of a blender defined dynamically in terms of strict invariance of a family of discs..