

Volume preserving aperiodic flows

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Constructing measure preserving nonsingular flows is difficult. It is not known whether there is a C^3 volume preserving flow on S^3 without closed orbits. In 1996, G. Kuperberg gave an example of a volume preserving aperiodic flow on S^3 , but the flow is only C^1 . The construction is based on Schweitzer's counterexample to the Seifert conjecture. Thus there are two minimal sets, each homeomorphic to the Denjoy minimal set. In 2003, Basak Gurel and Viktor Ginzburg made the construction Hamiltonian. The Hamiltonian is C^2 , the flow is C^1 . We will discuss another approach and exhibit difficulties in constructing a smooth aperiodic volume preserving flows on S^3 with only one minimal set.