MINIMAL DIFFEOMORPHISMS ON PRINCIPAL S^1-BUNDLES

ANATOLE KATOK

Let M be a C^∞ manifold which is a principal S^1-bundle of the class C^∞. One can construct an action on M of the group Q_2 of dyadic rational numbers modulo 1 by C^∞- diffeomorphisms $\{T_g\}, g \in Q_2$ in such a way that each orbit of this action is everywhere dense in M (minimal action). Furthermore, there exists a sequence $g_n \in Q_2$ such that the diffeomorphisms T_{g_n} converge in C^∞ topology to a diffeomorphism T whose orbits are also everywhere dense. This, in particular, provides a positive answer to a question about existence of a minimal homeomorphism on any sphere of odd dimension.

Similar results for flows take place as well if M is a principal T^2 bundle.

Translation from Russian by Svetlana Katok.