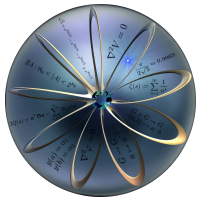

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Pugh's closing lemma

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Let $f : M \to M$ be a $\mathcal{C}^1$ diffeomorphism of a compact smooth manifold M. Given a nonwandering point x of f, there exists a diffeomorphism g arbitrarily close to f in the $\mathcal{C}^1$ topology of $\mathrm{Diff}^1(M)$ such that x is a periodic point of g.

The analogous theorem holds when x is a nonwandering point of a $\mathcal{C}^1$ flow on M.

References

[1] Pugh, C., *An improved closing lemma and a general density theorem*, Amer. J. Math. **89** (1967).