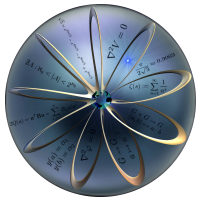

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Hayashi's connecting lemma

Canonical name	HayashisConnectingLemma
Date of creation	2013-03-22 14:07:16
Last modified on	2013-03-22 14:07:16
Owner	Koro (127)
Last modified by	Koro (127)
Numerical id	6
Author	Koro (127)
Entry type	Theorem
Classification	msc 37C05
Classification	msc 37C25
Synonym	connecting lemma

Let $f\colon M \to M$ be a C^1 diffeomorphism of the compact smooth manifold M, and let $p, q \in M$ be such that there exists a nonperiodic point in $\omega(p, f) \cap \alpha(q, f)$ (the intersection of the alpha limit set of q with the omega limit set of p). Then there exists a diffeomorphism g, arbitrarily close to f in the $\mathcal{C}^1$ topology of $\mathrm{Diff}^1(M)$, such that q is in the forward orbit of p through g, i.e. such that $g^n(p) = q$ for some $n > 0$.

References

[1] Wen, L., Xia, Z., $\mathcal{C}^1$ *connecting lemmas*, Trans. Amer. Math. Soc. **352** (2000), no. 11, 5213-5230.