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ERRATUM TO "ISOLATED INVARIANT SETS FOR FLOWS ON VECTOR BUNDLES"

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ABSTRACT. Let (F, f) be a flow on a vector bundle (E, M). If f is minimal on M, then the exponential growth rate intervals associated with the factors of an invariant splitting of E, corresponding to a Morse decomposition of PE, are disjoint intervals.

Let (M, d) be a compact metric space and E be a vector bundle over M. Consider a flow F on E which is a vector bundle morphism for each time $t \in R$. Let f denote the flow on M lying under F. Because of the linearity of F, it induces a flow PF on the projective bundle PE associated with the vector bundle [1]. In the case that f is chain recurrent, Theorem 11.7 in [1] asserts that the exponential growth rate intervals of the factors of an invariant splitting of E (corresponding to a Morse decomposition of PE [1]) are disjoint intervals. Thus orbits in the different factors grow at different rates. This is false. Neil Fenichel has an example where the growth rate intervals overlap. The mistake is in Lemma 11.3 where it is assumed that $|z \cdot t_k| \longrightarrow 0$ as $t_k \longrightarrow \infty$ being true for all z in one fiber over M implies that this is true in all fibers over M.

However, Theorem 11.7 and subsequent results in §11 are true if M is minimal. The method of proof is similar, with some modifications. If M is minimal the pertinent lemma is:

LEMMA. *Let $\{S_1, \ldots, S_k\}$ be a Morse decomposition of PF over M with $\{E_1, \ldots, E_k\}$ being the corresponding pullbacks to E. Then at most one E_i contains two points $x, y \neq 0$ such that the positive orbit of y is bounded and the negative orbit of x is bounded. Moreover, the remaining E_i's contain Z as an attractor or a repeller. (Z denotes the zero section of E.)*

REFERENCE

1. J. F. Selgrade, *Isolated invariant sets for flows on vector bundles*, Trans. Amer. Math. Soc. 203 (1975), 359–390.

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