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Stachó, L.L.

On nonlinear projections of vector fields. (English)

Nishizawa, Kiyoko (ed.), Convex analysis and chaos. The third symposium on nonlinear analysis, NLA '98, Josai University, Saitama, Japan, July 23-25, 1998. Saitama: Josai University, Graduate School of Science, Josai Math. Monogr. 1, 47-54 (1999).

The author proves a theorem concerning possibly nonlinear projections of locally Lipschitzian bounded vector fields on domains in Banach spaces. The main result is the following

Theorem. Let E be a Banach space, D, D_0 open $\subset E$ such that $\overline{D} \subset D_0$ and ∂D is a Lipschitzian submanifold of codimension 1 in D_0. Assume $X : D_0 \times \mathbb{R} \to E$ is a locally Lipschitzian bounded vector field which is complete in D and let $P : D_0 \to D_0$ be a twice continuously differentiable projection such that ran P is C^2-submanifold of D_0. Then the projected vector field $Y(a,t) := P'(a)X(a,t)$ $(a \in D_0,\, t \in \mathbb{R})$, is also complete in $D \cap \text{ran } P$.

Vassil Angelov (Sofia)

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