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On the Hurder-Katok extension of the Godbillon-Vey invariant. (English) Zbl 0722.57012

J. Fac. Sci., Univ. Tokyo, Sect. I A 37, No. 2, 255-262 (1990).

S. Hurder and *A. Katok* [Publ. Math., Inst. Hautes Étud. Sci. 72, 5-61 (1990)] defined the Godbillon-Vey invariant for foliations of class $C^{1+\alpha}$, $\alpha >$. The author considers the case $0 < \alpha <$ and proves the following two theorems: 1. The Godbillon-Vey 2-cocycle defined in $Diff^{\omega}_{+}(S^1)$ is not continuous in the $C^{1+\alpha}$ topology for $0 < \alpha <$. 2. For $0 < \alpha <$, there is a foliated R-product F with compact support over a closed oriented surface Σ of class $C^{1+\alpha}$ with the following properties. F admits a partition into a countable number of saturated Borel sets B_i where Godbillon-Vey invariants $GV(F, B_i)$ are defined and $\Sigma GV(F, B_i) = \infty$.

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MSC:

57R30 Foliations in differential topology; geometric theory
53C12 Foliations (differential geometric aspects)

Keywords:

Godbillon-Vey classes; foliations; foliated R-product; closed oriented surface; Borel sets