

Ricceri, Biagio; Villani, Alfonso**Separability and Scorza-Dragoni's property.** (English) Zbl 0581.28004

Matematiche 37(1985), 156-161 (1982).

Let T be a compact Hausdorff topological space, μ a Radon measure on T , X and Y two metric spaces. The main result of the paper states that if $f : T \times X \rightarrow Y$ is a Carathéodory function, i.e. $t \rightarrow f(t, x)$ is a μ -measurable function for each $x \in X$ and $x \rightarrow f(t, x)$ is a continuous function for μ -a.e. $t \in T$, then f satisfies Scorza-Dragoni's property, i.e. for every $\epsilon > 0$ there exists a closed subset T_ϵ of T , with $\mu(T \setminus T_\epsilon) < \epsilon$, such that the restriction of f to $T_\epsilon \times X$ is a continuous function, provided that X is separable. Under the continuum hypothesis, it is proved that if X is not separable, then there exists $f : [0, 1] \times X \rightarrow \mathbb{R}$, a Carathéodory function with respect to Lebesgue measure, which does not satisfy Scorza-Dragoni's property.

MSC:**28A20** Measurable and nonmeasurable functions, sequences of measurable functions, modes of convergence**28A35** Measures and integrals in product spaces**28C05** Integration theory via linear functionals (Radon measures, Daniell integrals, etc.), representing set functions and measuresCited in 4 Reviews
Cited in 9 Documents**Keywords:**

separability of a metric space; compact Hausdorff topological space; Radon measure; Carathéodory function; Scorza-Dragoni's property