

**Derrien, Jean-Marc**

**On the existence of cohomologous continuous cocycles for cocycles with values in some Lie groups.** (English) [Zbl 0984.37002](#)

*Ann. Inst. Henri Poincaré, Probab. Stat.* 36, No. 3, 291-300 (2000).

Let  $X$  be a compact metric space with a non-atomic Borel probability  $\mu$ , and  $T : X \rightarrow X$  an ergodic invertible  $\mu$ -preserving transformation. In this paper the following rather general result is proved for the cohomology of measurable cocycles. Let  $G$  be a connected Lie group with a Riemannian metric invariant under right and left translations (this is a condition on  $\text{Ad}(G)$ , satisfied for example when  $G$  is compact or abelian). Then any cocycle  $\varphi : X \rightarrow G$  that is integrable (in the sense that the geodesic distance from the identity element is integrable over  $X$ ) has an associated continuous cocycle  $\Phi : X \rightarrow G$  and a measurable transfer function  $\psi : X \rightarrow G$  with  $\Phi(x) = \psi(T^{-1}x)\varphi(x)\psi(x)$  a.e. This generalizes results due to *A. V. Kochergin* [*Dokl. Akad. Nauk. SSSR* 231, 795-798 (1976; [Zbl 0414.28024](#))] and *D. J. Rudolph* [*Ergodic Theory Dyn. Sys.* 6, 583-599 (1986; [Zbl 0625.28008](#))].

Reviewer: [Thomas Ward \(Norwich\)](#)

**MSC:**

[37A20](#) Algebraic ergodic theory, cocycles, orbit equivalence, ergodic equivalence relations

[28D15](#) General groups of measure-preserving transformations

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continuous cocycles; Lie groups

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