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A class of Markov processes which admit local times. (English) Zbl 0615.60069
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A class of standard processes which admit local times at each point is considered. The following regularity properties are assumed: $T_x \rightarrow T_a = 0$ (as $x \rightarrow a$) in P^a -probability and $P^a(T_b < \infty) > 0$ for all pairs of points a, b ($T_x = \inf\{t > 0 : X_t = x\}$). The class under consideration turns out to be very large. It is already known that a wide class of processes with independent increments fulfill our hypothesis. We also observe that the class is left invariant by the usual transformations: time change, subprocess and u-process (h- path) transformations.

The first important result of the paper is that every continuous additive functional may be represented as a mixture (integral) of local times. This theorem is used to prove two further results. The first one asserts that every process in the class has a dual process which remains in the class. Particularly Hunt's hypothesis (F) is satisfied. The second one generalises the occupation time and downcrossing approximating models. Such approximation theorems are proved for a C.A.F. whose representing measure is given.

MSC:

60J55 Local time and additive functionals
60G50 Sums of independent random variables; random walks

Cited in 4 Documents

Keywords:

local times; additive functional; occupation time; downcrossing approximating models

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