

Vuolle-Apiala, J.; Graversen, S. E.

Duality theory for self-similar processes. (English) Zbl 0608.60057
Ann. Inst. Henri Poincaré, Probab. Stat. 22, 323-332 (1986).

Let $(X_t, t \geq 0)$ be a time homogeneous strong Markov process on $\mathbb{R}^n \setminus \{0\}$ with transition function $(P_t(\cdot, \cdot))_{t \geq 0}$ and with nice sample paths. Assume that (i) for some $\alpha > 0$, $P_t(x, A) = P_{ct}(c^\alpha x, c^\alpha A)$ for $t \geq 0$, $x \in \mathbb{R}^n \setminus \{0\}$, $A \in \mathcal{B}(\mathbb{R}^n \setminus \{0\})$ and $c > 0$, and (ii) $P_t(x, A) = P_t(T(x), T(A))$ for $T \in \mathcal{O}(\mathbb{R}^n)$ (the group of orthogonal transformations on \mathbb{R}^n). In short, $(X_t, t \geq 0)$ is taken to be an α -self similar, rotation invariant Markov process.

It is shown that for the process X there exists another rotation invariant α -self similar Markov process which is in a weak duality with X with respect to the measure $|x|^{1/\alpha-n} dx$. Two characterizations of the dual process are also given.

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MSC:

60G99 Stochastic processes
60K99 Special processes
60J99 Markov processes

Cited in **1** Review
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Keywords:

self similarity; rotation invariant Markov process; characterizations of the dual process

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