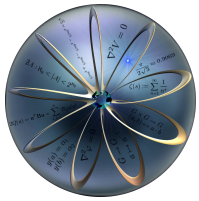

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Feller process

Canonical name	FellerProcess
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Entry type	Definition
Classification	msc 60J35
Defines	Feller semigroup
Defines	Feller transition function
Defines	Feller process
Defines	LCCB

Let E be a LCCB space (locally compact with a countable base; usually a subset of $\mathbb{R}^n$ for some $n \in \mathbb{N}$) and $C_0(E) = C_0(E, \mathbb{R})$ be the space of continuous functions on E that vanish at infinity. (We may write C_0 as shorthand.) A *Feller semigroup* on $C_0(E)$ is a family of positive linear operators $T_t, t \geq 0$, on $C_0(E)$ such that

- $T_0 = Id$ and $||T_t|| \leq 1$ for every $t \in T$, *i.e.* $\{T_t\}_{t \in T}$ is a family of contracting maps;
- $T_{t+s} = T_t \circ T_s$ (the semigroup property);
- $\lim_{t \downarrow 0} ||T_t f - f|| = 0$ for every $f \in C_0(E)$.

A probability transition function associated with a Feller semigroup is called a *Feller transition function*. A Markov process having a Feller transition function is called a *Feller process*.

References

[1] D. Revuz & M. Yor, *Continuous Martingales and Brownian Motion*, Third Edition Corrected. Volume 293, Grundlehren der mathematischen Wissenschaften. Springer, Berlin, 2005.