

On some ergodicity properties for time inhomogeneous Markov processes with T -periodic semigroup

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Abstract

We consider a time inhomogeneous strong Markov process $(\xi_t)_{t \geq 0}$ taking values in a Polish state space whose semigroup has a T -periodic structure. After reviewing some conditions which imply ergodicity of the grid chain $(\xi_{kT})_{k \in \mathbb{N}_0}$, and thus ergodicity of the T -segment chain $((\xi_{kT+s})_{0 \leq s \leq T})_{k \in \mathbb{N}_0}$, we formulate a new and more general condition for d -dimensional diffusions. It can be easily verified in terms of drift and diffusion coefficient of the process, and allows to deal both with unbounded coefficients and possibly degenerate diffusion term.