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WEAK ERGODICITY OF NONHOMOGENEOUS MARKOV CHAINS ON NONCOMMUTATIVE L^1 -SPACES

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ABSTRACT. In this paper we study certain properties of Dobrushin's ergodicity coefficient for stochastic operators defined on noncommutative L^1 -spaces associated with semi-finite von Neumann algebras. Such results extends the well-known classical ones to a noncommutative setting. This allows us to investigate the weak ergodicity of nonhomogeneous discrete Markov processes (NDMP) by means of the ergodicity coefficient. We provide a sufficient conditions for such processes to satisfy the weak ergodicity. Moreover, a necessary and sufficient condition is given for the satisfaction of the L^1 -weak ergodicity of NDMP. It is also provided an example showing that L^1 -weak ergodicity is weaker than weak ergodicity. We applied the main results to several concrete examples of noncommutative NDMP.

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