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RANDOM ITERATION WITH PLACE DEPENDENT PROBABILITIES

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Abstract. We consider Markov chains arising from random iteration of functions $S_\theta : X \to X$, $\theta \in \Theta$, where X is a Polish space and Θ is an arbitrary set of indices. At $x \in X$, θ is sampled from a distribution ϑ_x on Θ, and the ϑ_x are different for different x. Exponential convergence to a unique invariant measure is proved. This result is applied to the case of random affine transformations on $\mathbb{R}^d$, giving the existence of exponentially attractive perpetuities with place dependent probabilities.

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