LOCAL INVARIANCE PRINCIPLE FOR MARKOV CHAINS

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Abstract: We consider stationary homogeneous Markov chains and the polygonal processes defined by a usual way using such chains. There are many results about invariance principles of those processes. In this paper, we prove that under additional conditions, a stronger assertion (in some sense) is true. Indeed, we establish the convergence in variation for the distributions of the functionals of such a process, that is a local invariance principle. We study also the particular case of positive Harris recurrent Markov chains. Finally, we prove that the invariance principle and the local invariance principle remain valid when the initial chain is homogeneous but not stationary.

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