KERNEL ESTIMATION FOR REAL-VALUED MARKOV CHAINS

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ABSTRACT

The purpose of this paper is to study the problem of estimation of the stationary density and the transition density of a real-valued recurrent Markov chain. By using techniques of regenerative processes we are able to significantly reduce the strong hypotheses on the Markov chain such as Doeblin recurrence, stationarity, and mixing that were imposed in all the earlier works. We assume that the Markov chain satisfies a much weaker condition known as Harris recurrence. Our results hold for any initial distribution and we assume no mixing.