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Existence of Average Optimal Policies in Markov Control Processes with Strictly Unbounded Costs

Onésimo Hernández-Lerma

Abstract: This paper deals with discrete-time Markov control processes on Borel spaces and strictly unbounded one-stage costs, i. e. costs that grow without bound on the complement of compact sets. Under mild assumptions, the existence of a minimum pair for the average cost problem is ensured, as well as the existence of stable optimal and pathwise-optimal control policies. It is shown that the existence of a minimum pair is equivalent to the existence of a solution to an "optimality inequality", which is a weaker version of the dynamic programming (or optimality) equation.

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AMS Subject Classification: