

Estimates of Stability of Markov Control Processes with Unbounded Costs.

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Abstract: For a discrete-time Markov control process with the transition probability p , we compare the total discounted costs $V_\beta(\pi_\beta)$ and $V_\beta(\tilde{\pi}_\beta)$, when applying the optimal control policy π_β and its approximation $\tilde{\pi}_\beta$. The policy $\tilde{\pi}_\beta$ is optimal for an approximating process with the transition probability \tilde{p} .

A cost per stage for considered processes can be unbounded. Under certain ergodicity assumptions we establish the upper bound for the relative stability index $[V_\beta(\tilde{\pi}_\beta) - V_\beta(\pi_\beta)]/V_\beta(\pi_\beta)$. This bound does not depend on a discount factor $\beta \in (0, 1)$ and this is given in terms of the total variation distance between p and \tilde{p} .

Keywords:

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