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Ttulo: Discounted approximations to the risk-sensitive average cost in finite Markov chains

Abstract: This work concerns with Markov chains on a finite state space, which is endowed with a cost function. The evolution of the chain is observed by an agent with constant risk-sensitivity and, assuming that the state space is a communicating class, the relation between the risk-sensitive discounted and average performance criteria is studied. It is proved that, as the discount factor increases to 1, an appropriate normalization of the discounted value function converges to the average cost. Also, it is shown that if the classical normalization used in the risk-neutral case is applied in the risk-sensitive context, then the normalized discounted value function converges to an arithmetic mean of the average cost.