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离散时间马氏决策过程的首达目标准则

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Discrete-time Markov Decision Processes with First Passage Models

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摘要 本文考虑可数状态离散时间马氏决策过程的首达目标模型的风险概率准则. 优化的准则是最小化系统首次到达目标状态集的时间不超过某阈值的风险概率. 首先建立最优方程并且证明最优值函数和最优方程的解对应, 然后讨论了最优策略的一些性质, 并进一步给出了最优平稳策略存在的条件, 最后用一个例子说明我们的结果.

关键词: 目标集 首达时 风险概率

Abstract: This paper deals with risk probability for first passage models in discrete-time Markov decision processes with a denumerable state space. The criterion to be minimized is the risk probability (risk function) that a first passage time to a given target set is less than a threshold value. We first establish the optimality equation and show that solutions of the equation correspond to optimal value functions. Then, we discuss some properties of optimal policies and further give suitable conditions under which there exists an optimal stationary policy. Finally, in order to illustrate applications of our results, an example is also displayed.

Key words: target set first passage time risk probability

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