

制导、导航与控制

连续Markov跳变奇异系统的稳定性分析与镇定

高明¹, 盛立²

1. 山东科技大学信息与电气工程学院, 山东 青岛 266510;
2. 中国石油大学(华东)信息与控制工程学院, 山东 东营 257061

摘要:

研究了一类连续Markov跳变奇异系统的稳定性与镇定控制, 得到了保证连续Markov跳变奇异系统正则、无脉冲、随机稳定的充分性条件, 并设计了相应的镇定控制器。与已有文献中的结论相比, 文中研究系统的模式跳变转移概率可以是部分未知的, 所得条件以严格线性矩阵不等式的形式给出, 具有更小的保守性。仿真实例验证了文中结论的正确性。

关键词: 奇异系统 连续Markov跳变系统 镇定控制 部分未知转移概率

Stability analysis and stabilization of continuous-time Markov jump singular systems

GAO Ming¹, SHENG Li²

1. College of Information and Electrical Engineering, Shandong University of Science and Technology, Qingdao 266510, China;
2. College of Information and Control Engineering, China University of Petroleum (East China), Dongying 257061, China

Abstract:

The stability and stabilization problem for a class of continuous-time Markov jump singular systems is investigated. A sufficient condition is proposed for the Markov jump singular system to be regular, impulse-free and stochastically stable, and the design of the stabilizing controller is presented. Comparing with the previous literature, the system under consideration is more general since their transition probabilities of mode jumps can be partly unknown, and the results are presented in terms of a strict linear matrix inequality. A numerical example shows the effectiveness of the obtained result.

Keywords: singular system continuous-time Markov jump system stabilization partly unknown transition probability

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作者简介:

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