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# 基于滤波器的中立跳变系统参数估计和故障检测

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## Parameter Fault Detection and Estimation for Neutral Jump Systems Using Filters

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**摘要** 研究了一类含时滞和不确定性的中立跳变系统的参数估计和故障检测问题，通过重构系统，获取了包括未知输入、模型不确定性和时滞的误差动态特性.故障检测滤波器和鲁棒故障检测滤波器的存在条件都以线性矩阵不等式的形式给出.所设计的受限于模态的故障检测滤波器使得系统随机稳定，具有很好的抗扰性能和故障检测能力.仿真示例说明了设计方法的有效性.

**关键词**： 中立跳变系统　故障检测和估计　滤波器　时滞　不确定性　线性矩阵不等式.

**Abstract:** The problem of fault detection and estimation for a class of markov neutral jump systems with time-delay and norm-bounded uncertainties is considered.By re-constructing the system,the dynamics of the overall augmented error systems is obtained which involves unknown inputs represented by disturbances,model uncertainty and time-delays.Both the conditions for the existence of the fault detection filter and roust fault detection filter are presented in terms of linear matrix inequalities.The proposed mode-dependent fault detection filter makes the systems have stochastically stability and has better ability of minimizing the effects of disturbances and enhancing the effects of faults to the residuals.Simulation results illustrate the effectiveness of the developed approaches.

**Key words:** markov neutral jump systems (MNJS)　fault detection and estimation　filter　time-delay　uncertainties　linear matrix inequalities (LMIs)

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