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论文

一类线性离散时变系统的H∞故障估计

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摘要：

本文考虑一类受l2范数有界扰动影响的线性离散时变系统H∞故障估计问题.首先将H∞故障估计问题转化为二次型问题,引入相应的Krein空间系统,然后应用Krein空间白噪声估计理论,得到了问题可解的充要条件,并通过矩阵Riccati方程设计H∞故障估计器.算例验证了本文提出方法的有效性.

关键词： H∞故障估计 线性离散时变系统 Krein空间 白噪声估计 矩阵Riccati方程

The H∞ fault estimation for linear discrete time-varying systems

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Abstract:

The problem of H∞ fault estimation for a class of linear discrete time-varying systems with l2-norm-bounded disturbance was discussed. First, the problem of H∞ fault estimation was reformulated as the problem of a scalar quadratic form. Then, a corresponding system in Krein space was introduced. By applying white noise estimation theory in Krein space, a sufficient and necessary condition on the existence of an H∞ fault estimator was derived, and a solution was obtained in terms of matrix Riccati equation. A numerical example was given to demonstrate the efficiency of the proposed method.

Keywords: H∞fault estimation linear discrete time-varying systems Krein space white noise estimation matrix Riccati equation

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