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A Simple Approach to Robust Optimal Pole Assignment of Decentralized Stochastic Singularly-perturbed Computer Controlled Systems

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Abstract

This paper develops a simple algorithm for having robust optimal computer control in decentralized stochastic singularly-perturbed systems by poles assignment. This type of noise-disturbed system can be often seen in computer controlled large-scale systems such as electric power systems, communication networks, and aerospace systems. Due to that this computer controlled system possesses the fast response characteristics of the subsystems, the system analysis can be simplified by singularly perturbation methodology and the aggregation matrix is also applied to obtain faster calculation. Finally, the aggregation matrix is found out that will be an important intermediary to easily achieve the robust sub-optimal poles assignment. In the end, three steps are proposed to complete the robust sub-optimal pole assignment.

Key words: Robust; Computer ; Pole; Decentralized; Stochastic;
Singularly; Perturbed; Aggregation matrix