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Robustness and Reliability of Decentralized Stochastic Singularly-Perturbed Computer Controlled Systems with Multiple Time-Varying Delayds

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Abstract

Robustness investigation and reliability investigation are discussed andinvestigated in this research for computer control of decentralizedsingularly-perturbed systems with multiple time-varying delays. Due to that thesystems are controlled by using reduced-order control scheme, robustness of thesystem should be necessarily concerned. MATLAB can be applied to design programfor the robustness bound of the systems. A reliability goal for the system isthe stabilization of the plant by the controller in each control channel, suchthat the system can tolerate control channel failures. The results of theresearch show the system satisfy the required conditions to be a reliablecontrol system.

Key words: Decentralized; Reliability; Robustness; Singularly-perturbed; Time-varyingdelays