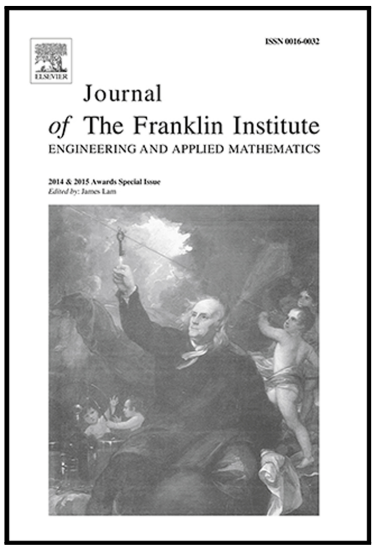

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Multiple switching-time-dependent discretized Lyapunov functions/functionals methods for stability analysis of switched time-delay stochastic systems

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Abstract

This paper presents novel approaches for stability analysis of switched linear time-delay stochastic systems under dwell time constraint. Instead of using comparison principle, piecewise switching-time-dependent discretized Lyapunov functions/functionals are introduced to analyze the stability of switched stochastic systems with constant or time-varying delays. These Lyapunov functions/functionals are decreasing during the dwell time and non-increasing at switching instants, which lead to two mode-dependent dwell-time-based delay-independent stability criteria for the switched systems without restricting the stability of the subsystems. Comparison and numerical examples are provided to show the efficiency of the proposed results.

Keywords: Switched stochastic systems, time-delay systems, delay-independent stability, mode-dependent dwell time

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