

Accepted Manuscript

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

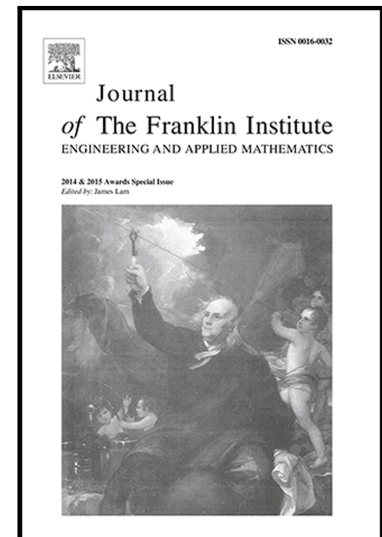
Shixian Luo, Feiqi Deng, Wu-Hua Chen

PII: S0016-0032(17)30636-1
DOI: [10.1016/j.jfranklin.2017.12.005](https://doi.org/10.1016/j.jfranklin.2017.12.005)
Reference: FI 3256

To appear in: *Journal of the Franklin Institute*

Received date: 31 March 2017
Revised date: 28 September 2017
Accepted date: 8 December 2017

Please cite this article as: Shixian Luo, Feiqi Deng, Wu-Hua Chen, Multiple switching-time-dependent discretized Lyapunov functions/functionals methods for stability analysis of switched time-delay stochastic systems, *Journal of the Franklin Institute* (2017), doi: [10.1016/j.jfranklin.2017.12.005](https://doi.org/10.1016/j.jfranklin.2017.12.005)



This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

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

Shixian Luo^a, Feiqi Deng^{a,*}, Wu-Hua Chen^b

^a*School of Automation Science and Engineering, South China University of Technology, Guangzhou, 510640, P. R. China*

^b*College of Mathematics and Information Science, Guangxi University, Nanning, Guangxi, 530004, P. R. China*

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

*Corresponding author at: School of Automation Science and Engineering, South China University of Technology, Guangzhou, 510640, P. R. China Tel: +86-020-87113386; Fax: +86-020-87112133.

Email addresses: shixianluo@126.com (Shixian Luo), aufqdeng@scut.edu.cn (Feiqi Deng), wuhua_chen@163.com (Wu-Hua Chen)

Download English Version:

<https://daneshyari.com/en/article/6952993>

Download Persian Version:

<https://daneshyari.com/article/6952993>

[Daneshyari.com](https://daneshyari.com)