

EXPONENTIAL STABILITY IN MEAN SQUARE OF A LARGE CLASS OF SINGULARLY PERTURBED STOCHASTIC LINEAR DIFFERENTIAL EQUATIONS *

Vasile Drăgan[†] Ioan-Lucian Popa[‡] Hiroaki Mukaidani[§]
Toader Moroza[¶]

Dedicated to Professor Mihail Megan
on the occasion of his 70th anniversary

Abstract

A stability problem for a class of large-scale singularly perturbed stochastic systems (SPSSs) with state-multiplicative white noise and Markovian jumping parameters is considered. Based on the linear evolution operator, an exponential stability in mean square is investigated.

*Accepted for publication on February 20, 2018

[†]Vasile.Dragan@imar.ro Institute of Mathematics "Simion Stoilow" of the Romanian Academy P.O.Box 1-764, RO-014700, Bucharest, and the Academy of the Romanian Scientists, Romania;

[‡]lucian.popa@uab.ro Department of Exact Sciences and Engineering, "1 Decembrie 1918" University of Alba Iulia, 510009-Alba Iulia, Romania; This work was supported by a grant of the Romanian National Authority for Scientific Research and Innovation, CNCS/CCCDI - UEFISCDI, project number PN-III-P2-2.1-PED-2016-1835, within PNCDI III.

[§]mukaida@hiroshima-u.ac.jp Graduate School of Engineering, Hiroshima University, Higashi-Hiroshima, Japan

[¶]Toader.Moroza@imar.ro Institute of Mathematics "Simion Stoilow" of the Romanian Academy P.O.Box 1-764, RO-014700, Bucharest, Romania;