Recent findings regarding the stability of infinite Markov jump linear systems

Amira KAMECHE[(1)] and Maissa KADA [(2)]

[(1)] *University Center of Barika, Institute of Sciences ,Department of Mathematics, Barika, Algeria*
e-mail: amira.kameche@cu-barika.dz

[(2)] *University of Batna 2, Department of Mathematics, Batna, Algeria*
e-mail: m.kada@univ-batna2.dz

Abstract

The purpose of this work is to present the topic of stability for Markov jump linear systems with regard to stochastic structured multiperturbations. In the literature, this important class of hybrid systems is referred to as Markov jump linear systems (MJLS)see [3]. The corresponding stability characteristics of this systems have attracted a great deal of attention see [4], [2].

Since the stochastic stability is the most basic requirement for MJLS, our particular concern in this work is with the robust stability analysis of MJLS. By framing the stability radius approach, we are able to employ classical LTI-based robust control techniques, which have not been considered before in this setup. We derive exact robustness margins in terms of a stochastic Lyapunov equation.

Keywords: Hilbert space, stability, Markov jump linear systems,uncertain systems.

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