On the stability analysis of arbitrarily high-index singular systems with multiple delays

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Abstract

This paper deals with the class of continuous-time singular linear systems with multiple time-varying delays in a range. The global exponential stability problem of this class of systems is addressed. Delay range-dependent sufficient conditions such that the system is regular, impulse-free and α-stable are developed in the linear matrix inequality (LMI) setting. Moreover, an estimate of the convergence rate of such stable systems is presented. A numerical example is employed to show the usefulness of the proposed results.

Keywords: Singular systems, Delay, LMIs, Spectral, Stabilization, Feedback.
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1. Introduction

2. Preliminaries

3.

4.

5. Conclusion and Outlook