Gao, Hui; Xia, Jianwei; Zhuang, Guangming; Wang, Zhen; Sun, Qun
Nonfragile finite-time extended dissipative control for a class of uncertain switched neutral systems. (English) Zbl 1380.93089

Summary: This paper is concerned with finite-time extended dissipative analysis and nonfragile control for a class of uncertain switched neutral systems with time delay, and the controller is assumed to have either additive or multiplicative form. By employing the average dwell-time and linear matrix inequality technique, sufficient conditions for finite-time boundedness of the switched neutral system are provided. Then, finite-time extended dissipative performance for the switched neutral system is addressed, where we can solve $H_\infty$, $L_2 - L_\infty$, Passivity, and $(Q, S, R)$-dissipativity performance in a unified framework based on the concept of extended dissipativity. Furthermore, nonfragile state feedback controllers are proposed to guarantee that the closed-loop system is finite-time bounded with extended dissipative performance. Finally, numerical examples are given to demonstrate the effectiveness of the proposed method.

MSC:
93B35 Sensitivity (robustness)
93B36 $H^\infty$-control
93C15 Control/observation systems governed by ordinary differential equations
34K40 Neutral functional-differential equations
93C41 Control/observation systems with incomplete information
93B52 Feedback control

Keywords:
finite-time extended dissipative analysis; nonfragile control; uncertain switched neutral systems; average dwell-time; linear matrix inequality technique; finite-time boundedness; state feedback controllers

Full Text: DOI

References:
This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original