



**FINITE-TIME CONTROL FOR ONE KIND OF LINEAR
DISCRETE SINGULAR SYSTEMS WITH PARAMETRIC
UNCERTAINTIES AND DISTURBANCES**

Chengbo Tan

Abstract

Finite-time control problem is considered for one kind of linear discrete singular systems with parametric uncertainties and exogenous disturbances, of which the parametric uncertainties are norm bounded and the disturbance satisfies a dynamical system. By Lyapunov functional method and linear matrix inequality (LMI) technique, the sufficient conditions of finite-time boundedness (FTB) via state feedback controller for normal linear discrete systems are provided. Based on “state-control pair” nonsingular transformation, linear discrete singular system is transformed into normal linear discrete system. Using the result above, we obtain the sufficient conditions of finite-time boundedness (FTB) via state feedback controller for linear discrete singular systems. Finally, an example is given showing the effectiveness of the proposed method.

Keywords and phrases: finite-time boundedness (FTB), linear discrete singular system, linear matrix inequality (LMI), parametric uncertainties, exogenous disturbances.

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