State Feedback Synthesis for Polynomial Systems With Finite Disturbances

Hiroyuki Ichihara

Department of Systems Innovation and Informatics
Kyushu Institute of Technology

680-4 Kawazu
Iizuka, 820-8502, Japan
ichihara@ces.kyutech.ac.jp

Abstract

This paper sketches a state feedback synthesis for polynomial systems in the presence of disturbances with finite peak or finite energy. The invariant set is composed of a level set of a Lyapunov function and is included in the region of the inputs and the state constraints under the disturbances. A two-step non-iterative design procedure is available by using matrix sum of squares relaxations and semidefinite programming. Numerical examples show the result of the paper.