Nonlinear Dynamics and Systems Theory, **6**(2) (2006) 143–158

INFOR MATH Publishing Group

Robust Dynamic Parameter-Dependent Output Feedback Control of Uncertain Parameter-Dependent State-Delayed Systems

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Received: June 29, 2005; Revised: April 27, 2006

Abstract: In this paper, we investigate the problem of robust dynamic parameter-dependent output feedback (RDP-DOF) stabilization under H_∞ performance index for a class of linear time invariant parameter-dependent (LTIPD) systems with multi-time delays in the state vector and in the presence of norm-bounded non-linear uncertainties. Using Hamiltonian–Jacobi–Isaac (HJI) method and the idea of polynomial parameter-dependent quadratic (PPDQ) Lyapunov–Krasovskii functions, a new sufficient condition is derived to ensure robust asymptotic stability and robust disturbance attenuation of the closed-loop system. Finally, an example is included that demonstrates the application of the results.

Keywords: *Parameter-dependent systems; multi-time delays; linear matrix inequality; robust dynamic parameter-dependent.*

Mathematics Subject Classification (2000): 34D20, 93A30, 93B36.