Turkish Journal of Electrical Engineering & Computer Sciences

@

Fault Tolerant Control With Re-Configuring Sliding-Mode Schemes

Ufuk DEMİRCİ[1], Feza KERESTECİOĞLU[2]
[1]Turkish Naval Forces, Department of Technics, Department of Electronics and Weapon Systems,
Bakanlıklar, 06100, Ankara-TURKEY
e-mail: udemirci@dzkk.tsk.mil.tr
[2]Kadir Has University, Department of Electronics Engineering, Cibali,
İstanbul-TURKEY
e-mail: kerestec@khas.edu.tr

Abstract: In this paper, a controller design method for linear MIMO systems is presented which a sliding mode controller is reconfigured in case of system faults. Faults are detected with the residual vector generated from a standard linear observer. Once a fault has been detected the fault distribution matrix can be obtained and used to update the corrective or equivalent control parts of the sliding mode controller. As a result, fault tolerant adaptive controllers keep the system performance within acceptable limits or at least avoids the system to wind-up.

Key Words: Fault detection, fault-tolerant systems, sliding-mode control, adaptive control, MIMO linear systems