

RESILIENT PI AND PD CONTROLLER DESIGNS FOR A CLASS OF UNSTABLE PLANTS WITH I/O DELAYS

H. ÖZBAY , A. N. GÜNDEŞ

ABSTRACT. In [8] we obtained stabilizing PID controllers for a class of MIMO unstable plants with time delays in the input and output channels (I/O delays). Using this approach, for plants with one unstable pole, we investigate resilient PI and PD controllers. Specifically, for PD controllers, optimal derivative action gain is determined to maximize the allowable controller gain interval. For PI controllers, optimal proportional gain is determined to maximize a lower bound of the largest allowable integral action gain.

Key words: PID Control, Time Delay, Unstable Systems