

## ABSTRACT

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This dissertation presents two sliding mode control strategies applied to nonminimum phase uncertain systems. The first algorithm uses the time-scaling technique in conjunction with a monitoring function, where the objective is to track a known and desired trajectory. Multiple observers for the unmeasured states of the plant, for the output signal and unknown perturbations served as the basis for the design of the second proposed algorithm, whose objective is the stabilization of the perturbed system. Both controllers use only output feedback to perform the proposed tasks. Global asymptotic stability is demonstrated for the closed loop system in both cases. Simulation results illustrate the performance of the proposed control algorithms.

Keywords: Nonminimum Phase Systems; Sliding Mode Control; Uncertain Systems; Time-Scaling; Monitoring Function; Multiple Observers; Global Stability.