Continuous dynamic gain scheduling control for input-saturated switched systems. (English)

Summary: In this paper, we proposed a continuous dynamic gain scheduling control for the input-saturated switched system. The state feedback controller and the compensator-based output feedback controller are both designed based on the parametric Lyapunov equation, sliding mode control and gain scheduling control. The advantages of the proposed methods are improving the dynamic performance of the switched system, guaranteeing the exponential stability of the closed-loop system and the proposed method has stronger disturbance rejection ability. The designed controllers can be computed by solving the parametric Lyapunov equation. The numerical simulations are carried out to illustrate the usefulness of the proposed methods.

MSC:

93B12 Variable structure systems
93C30 Control/observation systems governed by functional relations other than differential equations (such as hybrid and switching systems)
93B52 Feedback control

Keywords:

sliding mode control; input-saturated switched system; compensator design; output feedback

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References:


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