Two sets of switching surfaces for a class of mismatched uncertain systems: An LMI approach

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ABSTRACT

This paper investigates a new dynamic output feedback control design approach for variable structure systems associated with a new sliding mode. It is based on the concept of output feedback sliding mode design, introduced by Shyu et al. [10], for a class of mismatched uncertain systems in which the uncertainty in the state matrix does not enjoy the matching condition. In this paper, we extend this idea to a new design approach. In terms of linear matrix inequalities (LMIs), we give explicit formulas of two sets of linear switching surfaces to assure that the system in the new sliding mode is asymptotically stable. Moreover, a modified variable structure controller is derived to guarantee the existence of the sliding mode by using output feedback only.

Keywords: output feedback; variable structure control; linear matrix inequality (LMI); mismatched uncertainty

REFERENCES