

Aircraft pitch control tracking with sliding mode control

ABSTRACT

Sliding mode control (SMC) is one of the robust and nonlinear control methods. An aircraft flying at high angles of attack is considered nonlinear due to flow separations, which cause aerodynamic characteristics in the region to be nonlinear. This paper presents the comparative assessment for the flight control based on linear SMC and integral SMC implemented on the nonlinear longitudinal model of a fighter aircraft. The controller objective is to track the pitch angle and the pitch rate throughout the high angles of attack envelope. Numerical treatments are carried out on selected conditions and the controller performances are studied based on their transient responses. Obtained results show that both SMCs are applicable for high angles of attack.

Keyword: F18-HARV; Pitch control; Sliding mode control