A Sliding Model Control for a Hybrid Hyperbolic Dynamic System

Authors : Xuezhang Hou

Abstract : In the present paper, a hybrid hyperbolic dynamic system formulated by partial differential equations with initial and boundary conditions is considered. First, the system is transformed to an abstract evolution system in an appropriate Hilbert space, and spectral analysis and semigroup generation of the system operator is discussed. Subsequently, a sliding model control problem is proposed and investigated, and an equivalent control method is introduced and applied to the system. Finally, a significant result that the state of the system can be approximated by an ideal sliding mode under control in any accuracy is derived and examined.