



Active Fault Tolerant Synchronization of Two Hyper Chaos Lu Systems with Disturbance Input and Parametric Uncertainty

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Abstract: In this paper, a robust controller is proposed to synchronize two hyperchaos Lu systems with unwanted factors such as uncertainty and disturbance. In this research, first, an integral sliding mode control to synchronize two hyperchaos Lu systems with known parameters and known bound of uncertainty and disturbance is proposed. In the second part of the paper, a controller for synchronization of two hyperchaos systems with unknown parameters and unknown bound of uncertainty and disturbance is designed, and unknown parameters are estimated by an adaptation rule. The stability of the control is proved using the Lyapunov stability method in the corresponding cases. The simulation results with MATLAB software show that the designed controller is able to synchronize two systems, although they have uncertain parameters.

Keywords: *integral sliding mode; adaptive control; hyperchaos; uncertainty; parameter estimation.*

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