Synchronizing the Noise-Perturbed Rössler Hyperchaotic System via Sliding Mode Control

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This paper investigates the synchronization problem between two unidirectionally-coupled Rössler hyperchaotic systems in the presence of noise perturbations. Sufficient conditions are obtained for synchronization by using a particularly simple linear sliding mode surface that is based on the sliding mode control concept. Only one controller function is needed to achieve synchronization in our present approach which makes it much easier to implement in contrast to many other synchronization schemes that require two or more controllers. Numerical simulation results are also included to illustrate the superior features of this new scheme.

Key words: Synchronization; Sliding Mode Control; Rössler Hyperchaotic System.