

Synchronization of Kuramoto Oscillators with Adaptive Couplings

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Abstract

In this talk, we study the synchronization of Kuramoto oscillators with adaptive coupling in interacting networks. Network dynamics preserves the sum of all incoming pairwise coupling strengths and is designed to adaptively interact with system dynamics. For adaptive couplings, we use two adaptive coupling laws for the pairwise coupling strength. Kuramoto oscillators are assumed to be on the nodes of the networks. We present frameworks that guarantee the emergence of synchronization for various coupling feedback laws. Our results generalize earlier work on the synchronization of Kuramoto oscillators in fixed and symmetric networks. This is a joint work with Seung-Yeal Ha and Jinyeong Park.