Synchronization Analysis of Coupled Noncoherent Oscillators

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Abstract

Two different approaches to detect and quantify complex synchronization phenomena in chains of oscillators with complex topology will be presented. the first is based on the general idea of curvature of an arbitrary curve. The second one is based on the concept of recurrences of a trajectory in phase space. The potentials of both techniques will be demonstrated for paradigmatic models systems as well as for experimental data from electrochemistry and lasers. The second method is appropriate even in the case of noisy data.