

Noise-induced synchronization in circulant networks of weakly coupled oscillators

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Consider a finite-size system of coupled harmonic oscillators with a circulant coupling structure. We will present an averaging result for stochastic differential equations which will allow us to show that weak multiplicative-noise coupling can amplify some of the systems' eigenmodes and, hence, lead to asymptotic eigenmode synchronization. Our result allows to determine the metastable states as a function of the precise choice of coupling.

Reference: PhD thesis of Christian Wiesel (formerly University of Bielefeld)