

# Computational approach to synchronization of nonlinear coupled systems\*

Chin-Kun Hu

*Institute of Physics of Academia Sinica, Taipei 11529, Taiwan*

Email: huck@phys.sinica.edu.tw

Synchronization appears in many natural phenomena, such as neural oscillation, coherent motion of birds and fishes, etc. In this talk, I briefly review some developments in computational approach to synchronization in nonlinear coupled systems. The topics under discussion include: (1) synchronization and coherence in thermodynamic coupled map lattices with intermediate range coupling [1], (2) synchronous chaos in coupled map lattices with small-world interactions [2], (3) synchronization for systems on scale-free networks [3], (4) universality and scaling in transition to synchronous chaos with local-global interactions [4], (5) synchronized state of coupled dynamics on time-varying networks [5], (6) influence of noises and delay on the synchronization of the stochastic Kuramoto model [6], (7) paths to globally generalized synchronization in scale-free networks [7], (8) stepwise transition to higher degrees of coherence in a random network of phase oscillators [8].

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\*Invited talk at XXV IUPAP Conference on Computational Physics, August 20-24, 2013, Moscow, Russia (website: <http://ccp2013.ac.ru/>)