The Abdus Salam International Centre for Theoretical Physics

Conference on Long-Range Interacting Many-Body Systems: from Atomic to Astrophysical Scales (25 - 29 July 2016)

Venue: ICTP Leonardo da Vinci Building - Budinich Lecture Hall
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Title:
Surprises in dynamics of coupled oscillator systems in presence of local potential

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Abstract:

We consider a long-range model of coupled phase-only oscillators subject to a local potential and evolving in presence of thermal noise. We demonstrate by exact results and numerics a very rich long-time behavior, in which the system settles into either a time-independent steady state that could be in or out of equilibrium and supports either global synchrony or absence of it, or, in a time-periodic state. The system shows both continuous and first-order phase transitions, as well as an interesting reentrant transition in which the system loses synchrony, but regains it on further increase of the relevant dynamical parameter (Joint work with Alessandro Campa (Rome)).