



Workshop

Dynamics and stability of interacting nonlinear oscillators and their applications

Weierstrass Institute for Applied Analysis and Stochastics,
Mohrenstraße 39, 10117, Berlin
February 13, 2015

Organizers:

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[International Research Training Group 1740](#),
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Coupled nonlinear oscillators appear by the modeling of many physical, biological, or technological processes. Examples are interacting lasers, neuronal networks, power grids, compound mechanical systems, complex traffic systems, etc. This mini-workshop is devoted to the recent theoretical advances in the dynamics of coupled nonlinear oscillators with special attention on the dynamical stability of collective behavior, formation of oscillatory patterns, effects of the propagation delays or inhomogeneities on the dynamics and their applications to neuroscience and engineering.

PROGRAMM

10:00 – 10:05 Opening	
10:05 – 10:40 Vladimir Nekorkin (Nizhny Novgorod) “Transient metastable dynamics in neural networks”	15:00 – 15:30 Sabine Auer (PIK Potsdam) „ <i>The Dynamics of Coalition Formation on Complex Networks</i> “
10:40 – 11:00 Coffee break	
11:00 – 11:30 Florence Gerson (PIK Potsdam) „ <i>A possible underlying mechanism of Deep Brain Stimulation in Parkinson's disease: therapeutic effect of synaptic noise on the neural network</i> “	15:30 – 16:00 Christian Schmelzer (HU Berlin) “ <i>Relating Structure and Function of Neuronal Networks</i> ”
11:30 – 12:00 Leonhard Lücken (WIAS Berlin) „ <i>Interplay of noise and synaptic plasticity in coupled neural oscillators</i> “	16:00 – 16:30 Coffee break
12:00 – 13:00 Lunch	16:30 – 17:00 Philipp Pade (HU Berlin) „ <i>More is less: Improving connections can lead to network failure</i> “
13:00 – 13:35 Vladimir Klinshov (Nizhny Novgorod) “On origin of multi-jittering in systems with pulsatile delayed feedback”	17:00 – 17:30 Carsten Grabow (PIK Potsdam) „ <i>Impact of Network Topology on Decentral Frequency-based Smart Grid Control</i> “
13:35 – 14:05 Thiago Prado (PIK Potsdam) “ <i>Synchronization transitions with Hodgkin-Huxley-type neurons in clustered networks</i> ”	17:30 – 18:00 Paul Schultz (PIK Potsdam) “ <i>Power grids: Application of stability of nonlinear oscillators networks</i> ”
14:05 – 14:30 Coffee break	
14:30 – 15:00 Peng Ji (PIK Potsdam) „ <i>Analysis of a Kuramoto model with inertia based on the basin of attraction</i> “	18:00 – 20:00 Dinner (Maximillians, Friedrichstraße 185-190)