

Dynamics Days Europe 2018, 3-7 September

Minisymposium "Complex dynamics of quantum systems"

1. Eckehard Schöll (Berlin) "Quantum signatures of chimera states"

Abstract: Chimera states are complex spatiotemporal patterns in networks of identical oscillators, characterized by the coexistence of synchronized and desynchronized dynamics. Here we propose to extend the phenomenon of chimera states to the quantum regime, and uncover intriguing quantum signatures of these states [1]. We calculate the quantum fluctuations about semiclassical trajectories and demonstrate that chimera states in the quantum regime can be characterized by bosonic squeezing, weighted quantum correlations, and measures of mutual information. Our findings reveal the relation of chimera states to quantum information theory, and give promising directions for experimental realization of chimera states in quantum systems.

[1] V. Bastidas, I. Omelchenko, A. Zakharova, E. Schöll, and T. Brandes: Quantum signatures of chimera states, Phys. Rev. E 92, 062924 (2015).

- 2. Alexey Yulin (St. Petersburg) "Complex dynamics and synchronization of exciton-polariton states in semiconductor microcavities".**
- 3. Sergey Saveliev (Loughborough) "Simulation of memristors"**
- 4. Nicola Wilkin (Birmingham) TBA**
- 5. Alexander Hramov (Saratov) "Dynamical chaos in arrays of Rydberg atoms"**
- 6. Kirill Alekseev (Loughborough) "Spatial profiles of E-field in nanostructures as a dynamical system"**
- 7. Richard Hill (Nottingham) "Diamagnetic levitation of spinning and highly charged liquid drops"**
- 8. Feo Kusmartsev (Loughborough) "Dynamical topological transition"**
- 9. Apostolos Apostolakis (Prague) "Absolute negative conductivity in biased semiconductor superlattices driven by a plane wave."**