MPIDS Colloquium



Spatial coexistence patterns in oscillatory media: Chimera states and beyond

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Chimera states, the counterintuitive coexistence of synchronized and desynchronized regions in an otherwise isotropic system, have received considerable interest during the last decade. While early studies concentrated on chimera states in ensembles of phase oscillators, meanwhile a variety of chimeras in different settings, including Stuart-Landau oscillators with strong nonlocal or global coupling, and oscillatory networks with different coupling topologies have been reported.

In the talk, I will first present a universal characterization scheme for chimera states applicable to any numerical or experimental data. Then, I will present experiments and simulations that suggest that chimera states are just one realization of a multitude of related coexistence patterns, showing a similar level of seemingly contradictory behavior. In a wider sense, the coexistence of such disparate patterns can be seen as diversification of the dynamical behavior of a system with uniform parameters.

Wednesday, December 07th, 2016 at 2:15 pm

MPIDS, Prandtl lecture hall, building Al, Am Faßberg 11, Göttingen

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