

* Electronic Address: Oleh.Omelchenko@wias-berlin.de

¹ Weierstrass Institute, Berlin

Patterns of coherence and incoherence

Oleh Omel'chenko^{1*}

Arrays of coupled limit-cycle oscillators are used to model a variety of pattern-forming systems in neuroscience, biochemistry, physics and engineering. One of the most striking discoveries made recently in this field, are so-called 'chimera states', or coherence-incoherence patterns emerging spontaneously in systems of identical non-locally coupled oscillators. Despite the nontrivial dynamical nature of such patterns, one can effectively study them using methods of nonequilibrium statistical physics. In this talk, we discuss a continuum limit integro-differential equation describing the evolution of the local order parameter representing chimera states. We overview typical bifurcation scenarios leading to the appearance of chimera states and provide their natural classification.