

## Emergence of imperfect travelling chimera states in a network of locally coupled oscillators

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Spatially coexisting of coherence and incoherence dynamics in a network of coupled identical oscillators are called chimera states. We study the emergence of different types of chimera patterns in a network of neuronal oscillators, interacting through local synaptic gradient coupling. For asymmetric excitatory interaction we observed the imperfect traveling chimera states [1], where the incoherent traveling domain spreads into the coherent domain of the network and also we discussed the occurrence of another types of chimera states in a one-way local interactions in a network of coupled oscillators. Depending on the values of chemical synaptic coupling and gradient coupling strength other various type of chimera states namely imperfect chimera, travelling chimera states are emerge. We choose a network of identical bursting Hindmarsh-Rose neuronal oscillators, and map all the spatiotemporal behaviors in parameter space and identify the transitions among several chimera patterns, an in-phase synchronized state, and a global amplitude death state. We also discussed the characterization [2] and transition between these states together with incoherence and coherence dynamics.

### References

1. Bidesh K. Bera, Dibakar Ghosh, and Tanmoy Banerjee, *Phys. Rev. E*, 94, 2016, 012215.
2. Iryna Omelchenko, Oleh E. Omel'chenko, Philipp Hövel, and Eckehard Schöll, *Phys. Rev. Lett.* 110, 2013, 224101

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