

Cloning of chimera states in a multiplex network of relaxation oscillators

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Abstract: A new phenomenon of the chimera states cloning in a two-layer multiplex network with short-term couplings has been discovered and studied. For certain values of strength and time of multiplex interaction, in the initially disordered layer, a state of chimera is formed with the same characteristics (the same average frequency and amplitude distributions in coherent and incoherent parts, as well as an identical phase distribution in coherent part), as in the chimera which was set in the other layer. The mechanism of the chimera states cloning is examined. It is shown that the cloning arises from the competition of oscillations in pairs of oscillators from different layers.

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