# Multiple time-delay effect on synchronization of chaotic systems

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Our research focuses on synchronization of chaotic systems with several time-delays. The formalism of the Master Stability Function is used to study small graphs of chaotic maps with different topologies, with both analytical and computational approaches. Special attention is paid on the corresponding phase diagrams and the conditions for the maximal stability gap.
Some general analytical results are obtained in the case of Bernoulli maps taking into account the interplay between synchronization of networks with heterogeneous delays and the greatest common divisor of loops composing the network.
On a second stage, we study the prevalence or not of the previous results replacing networks units with Integrate and Fire neurons with inhibitory delayed synapses. Finally, extention to more complicated neuronal systems with several time-delays is considered as well.

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