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Topic: Synchronization of Nonlinear Systems

Intermittent synchronization of noise-induced bursts

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We study synchrony of noise-induced bursts in systems which, for vanishing noise, possess an unstable chaotic set and a stable fixed point. In these systems, from time to time, noise forces systems to leave the stable fixed point and spend some time on the chaotic set, what results in the noise-induced intermittency, where "laminar" epochs intermingle with bursts. Identical systems driven by common noise are synchronized during the laminar epochs and desynchronized during bursts. In the presence of additional intrinsic noise (specific for each system) a statistical description of synchrony (synchronization and desynchronization events, etc.) is possible and has been performed analytically. We check our analytical findings with numerical simulations of a modified tent map.