Coherence resonance in excitable and oscillatory devices

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Abstract:

First we discuss coherence resonance in excitable systems where it appears as a ordering of spike trains if changing the noise intensity. We show that the temporal behaviour can be interpreted as stochastic oscillations. Several applications in biophysical models and the resonant interaction with periodic driving are presented.

In the second part we report on the observation of coherence resonance for a semiconductor laser close to Hopf bifurcations. Noise-induced self-pulsations are documented by distinct Lorentzian-like features in the power spectrum. As will be shown the character of coherence is critically related to the type of the Hopf-bifurcation.

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