

Effective phase dynamics of noise-induced oscillations in excitable systems

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We develop an effective description of noise-induced oscillations based on deterministic phase dynamics. The phase equation is constructed to exhibit correct frequency and distribution density of noise-induced oscillations. In the simplest one-dimensional case the effective phase equation is obtained analytically, whereas for more complex situations a simple method of data processing is suggested. As an application an effective coupling function is constructed that quantitatively describes periodically forced noise-induced oscillations.

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