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Abstracts of Short Communications and Posters

Section:

9. Ordinary Differential Equations and Dynamical Systems

1991 MS Classification: 34, 60, 70
Bashkirtseva, Irina, Ryashko, Lev, Urals State University, Russia
Quasipotential in stochastic stability analysis of limit cycles
The problem of auto-oscillations stability of nonlinear system with respect to small stochastic disturbances is considered. The stability analysis on the base of the quasipotential function is used. The local description (near deterministic oscillator orbit) of the quasipotential is investigated. For the plane orbit case the quasipotential approximation is given by some scalar function. This function plays a role of risk function allowing to compare the stability levels of the different pieces of orbits. For stochastically forced brusselator we demonstrate that risk function is a simple theoretical predictor of the distribution width about the stable limit cycle. Reference: L. B. Ryashko, The stability of stochastically perturbed orbital motions, *J. Appl. Maths Mechs.* **60** (1996),579-590.