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Section:

9. Ordinary Differential Equations and Dynamical Systems

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Suppression of chaos in a quasi-periodically excited system

We show that suppressing chaos in a nonlinear one-degree-of-freedom oscillator subjected to external and parametric excitations having incommensurate frequencies may be achieved. An adapted BogolioubovMitropolski method is first developed to reduce the original quasi-periodic system to a driving periodic one. To study the chaotic dynamic, the Melnikov method is derived on the reduced system. The possibility to realize a suitable system control of chaos by introducing a third harmonic parametric component on a nonlinear term of the system is investigated. Reference: M. Houssni, and M. Belhaq, Suppression of chaos in a quasiperiodically excited system, Submitted to Phys. Rev. E, 1998.