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9. Ordinary Differential Equations and Dynamical Systems

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Fahsi, Abdelhak, University Hassan II Mohammedia, Morocco

Saddle loop and chaotic bifurcations in nonlinear oscillators

In this work we develop an analytical method to predict homoclinic bifurcation in autonomous self-excited nonlinear oscillators. The method is also developed to predict chaotic bifurcation in nonautonomous nonlinear oscillators. To illustrata the predictive criteria, some typical examples are investigated and the results obtained in this work are compared to Melnikov technique and to numerical simulations. Reference:1. M. Belhaq, and A. Fahsi, Repeated resonances to chaos in forced oscillators, Mech. Res. Com. 21 (1994), 415-422. 2. M. Belhaq, and A. Fahsi, Homoclinic bifurcations in selfexcited oscillators, Mech. Res. Com. 23 (1996), 381-386.