Parametric perturbations and stabilisation of chaotic behaviour of dynamical systems

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Summary

Dynamical systems with external periodic perturbations are considered in a general form. An approach according to which such systems can be reduced to autonomous ones and simplified, is rigorously justified. The behaviour of quadratic and exponential family maps at parametric perturbations is studied. It is proven that there exist periodic perturbations operating strictly in the chaotic subset which lead to the dynamics stabilisation and appearance of stable cycles in the initially chaotic maps. Analytic results are added by numerical simulations. It is shown that chaos can be suppressed by a quite complex perturbation. A comparison between results which are obtained at several perturbations, is performed.