



On the period of the limit cycles appearing in one-parameter bifurcations

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Abstract

The generic isolated bifurcations for one-parameter families of smooth planar vector fields $\{X_\mu\}$ which give rise to periodic orbits are: the Andronov–Hopf bifurcation, the bifurcation from a semi-stable periodic orbit, the saddle-node loop bifurcation and the saddle loop bifurcation. In this paper we obtain the dominant term of the asymptotic behaviour of the period of the limit cycles appearing in each of these bifurcations in terms of μ when we are near the bifurcation. The method used to study the first two bifurcations is also used to solve the same problem in another two situations: a generalization of the Andronov–Hopf bifurcation to vector fields starting with a special monodromic jet; and the Hopf bifurcation at infinity for families of polynomial vector fields.

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