HOPF BIFURCATION, AVERAGING METHODS AND LIAPUNOV QUANTITIES FOR POLYNOMIAL SYSTEMS WITH HOMOGENEOUS NONLINEARITIES

by

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ABSTRACT. We study two-dimensional autonomous differential systems of the form $\dot{x} = \alpha x - y + P_n(x,y)$, $\dot{y} = x + \alpha y + Q_n(x,y)$, where P_n and Q_n are homogeneous polynomials of degree $n \geq 2$. For such systems we shall characterize the Hopf bifurcation in two different ways, one by using averaging methods and the other one through Liapunov quantities.

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