

ON THE LYAPUNOV QUANTITIES OF TWO-DIMENSIONAL
AUTONOMOUS SYSTEMS OF DIFFERENTIAL EQUATIONS WITH
A CRITICAL POINT OF CENTRE OR FOCUS TYPE

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Abstract

Analytical two-dimensional system of differential equations with a weak focus are considered. It is shown how by using a given sequence of homogeneous polynomials of even degree one can construct a function with the rate of change along trajectories of system to be a linear combination of these polynomials. The coefficients of this linear combination are the Lyapunov quantities.