

LARGE AMPLITUDE LIMIT CYCLES IN KUKLES SYSTEMS WITH INVARIANT ELLIPSE

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ABSTRACT. A normal form is obtained for the Kukles polynomial systems of arbitrary degree with an invariant ellipse. We study some existence and uniqueness results for limit cycles of that family. Moreover, the tangential 16th Hilbert problem is discussed for that polynomial systems showing an upper bound for the number of bifurcated limit cycles depending on the degree of the system. We conclude with some numerical simulations of the obtained results.

Keywords: Polynomial differential equations, invariant algebraic curves.

AMS classification: Primary 34C05; Secondary 34C14, 22E05.

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(2) Financed partially by: USM Grant No.120121 , FONDECYT Grants No.1030264 and MCYT Grant BFM 2002-04236-C01-01 .