

LIMIT CYCLES IN DISCONTINUOUS GENERALIZED LIÉNARD DIFFERENTIAL EQUATIONS

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July 10, 2020

Abstract

The goal of this paper is to study the number of limit cycles that can bifurcate from the periodic orbits of a linear center perturbed by nonlinear functions inside the class of all generalized Liénard differential equations allowing discontinuities. In particular our results show that for any $n \geq 1$ there are differential equations of the form $x'' + f(x; x_-)x_- + x + \text{sgn}(x_-)g(x) = 0$, with f and g polynomials of degree n and 1 respectively, having $[n/2] + 1$ limit cycles, where $[]$ denotes the integer part function.

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