



Cyclicity Near Infinity in Piecewise Linear Vector Fields Having a Nonregular Switching Line

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Abstract

In this paper we recover the best lower bound for the number of limit cycles in the planar piecewise linear class when one vector field is defined in the first quadrant and a second one in the others. In this class and considering a degenerated Hopf bifurcation near families of centers we obtain again at least five limit cycles but now from infinity, which is of monodromic type, and with simpler computations. The proof uses a partial classification of the center problem when both systems are of center type.

Keywords Piecewise linear planar vector fields · Center-focus problem · Local cyclicity · Nonsmooth boundary

Mathematics Subject Classification Primary 34C07; Secondary 34C23 · 37C27

1 Introduction

The study of differential equations has been one of the most widely used tools in modeling real phenomena. One of the most relevant problems in the qualitative theory of differential equations is the study of the number, configuration and stability of isolated periodic orbits, the so called limit cycles. These problems attracted the attention

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