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ON ASYMPTOTICALLY AUTONOMOUS DIFFERENTIAL EQUATIONS IN THE PLANE

Boris S. Klebanov

1. Introduction

In this paper, we study qualitative behaviour of trajectories of solutions of perturbed autonomous differential equations in the plane. We work in the framework of an axiomatic theory of solution spaces of ordinary differential equations suggested by V. V. Filippov (see the survey [7] and the references therein). This theory provides a unified approach to the study of solutions of ordinary differential equations, including equations with singularities, as well as of differential inclusions. The theory sets a series of axioms which reflect fundamental properties of solution sets of ordinary differential equations and deals with sets of functions satisfying one or another set of these axioms. Topological structures introduced make it possible to deal with sets of solutions as with elements of a topological space.

It is well known that many results in the classical qualitative theory of ordinary differential equations extend to dynamical systems. The theory suggested by Filippov allows one to develop such results in another direction and to extend them, in particular, to differential equations with singularities of various types. There are also many situations where the methods developed lead to new results in the classical realms, even for equations $y' = f(t, y)$ ($y' = dy/dt$) with

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