

ON THE ATTRACTION AND STABILITY OF SETS WITH RESPECT TO SOLUTIONS OF ORDINARY DIFFERENTIAL EQUATIONS

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1. Introduction

An analysis of the concepts of attraction and stability of solutions of ordinary differential equations is normally concerned with a study of *one* equation near its stationary point or invariant set. This paper is concerned with a more general situation: we consider attraction and stability of sets with respect to solutions of a *family* of differential equations.

Our analysis will be carried out within the framework of an axiomatic theory of spaces of solutions of ordinary differential equations and inclusions suggested by V. V. Filippov (see survey [10] and the references therein). This theory is based upon singling out as axioms some basic properties of the solutions of ordinary differential equations and studying sets of continuous functions having these properties. Topological structures introduced in the framework of the theory, which allow one to deal with sets of solutions of a differential equation (or inclusion) as with points of a topological space, play the most important role in the apparatus of the theory. These structures will provide the environment we shall be working in throughout the paper.

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