Chapter 3
Stability of Hybrid Systems in a Metric Space

Introduction

More general hybrid systems (than the ones of two classes discussed in the previous chapters) consist of heterogeneous subsystems related by interconnection operators [1, 26, 25 etc.]. The concept of generalized time [28, 30] made it possible to unify many results in this field by considering a generalized hybrid system in a metric space [30].

In this chapter, following the concept of this book we will consider hybrid systems with weakly interacting subsystems that are described by equations in a Banach space.

Section 3.1 provides some information from the theory of equations in Banach spaces.

In Section 3.2, the stability problem for equations in an infinite-dimensional space is formulated.

Section 3.3 discusses the generalization of the direct Lyapunov method based on matrix-valued functions for equations in a Banach space.

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