Abstract

In this thesis we study three different problems.

First, we study a class of a multivalued perturbations of m-dissipative evolution inclusions with nonlocal initial condition in arbitrary Banach spaces. We prove the existence of solutions when the multivalued right hand side is Lipschitz and admits nonempty closed bounded but, in general case, neither convex nor compact values. Illustrative example is provided.

Second, we prove two variants of the well known lemma of Filippov–Pliss in case of dynamical inclusions on time scale. The first variant is when the right-hand side is Lipschitz continuous on the state variable. Afterward we introduce one sided Perron conditions for multifunctions on time scale and prove the second variant of that lemma. Some discussions on relaxed systems is provided.

Third, we investigate fuzzy fractional integral inclusions under compactness type conditions. We prove the existence of solutions when the right-hand side is almost upper semicontinuous. We also show that the solution set is connected. Finally, an application to fuzzy fractional differential inclusions is given.