
On non compact fractional order differential inclusions with generalized boundary conditions and impulses

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Abstract

Fractional calculus deals with generalizations of ordinary integral and differential operators. Fractional derivative and integrals, as non-integer derivatives and integrals, give more flexibility helping to model real-life problems. In particular, they all are very useful at describing the anomalous phenomena, providing an excellent tool for the description of memory and hereditary properties of various materials and processes. On the other hand, impulses take into account parameters subjected to short-term perturbations in time, as is the case in various processes in physics, population dynamics, biotechnology and economics.

In this talk I will show existence results for a fractional differential inclusion with non local conditions and impulses in a reflexive Banach space. I will apply a technique based on weak topology to avoid any kind of compactness assumptions on the nonlinear term. These arguments are motivated by an application to a parabolic differential equation with the non-linearity depending on an integral term.

This is a joint work with Valeri Obukhovskii and Valentina Taddei.

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