A survey of impulsive Caputo fractional differential equations

Snezhana Hristova

Department of Applied mathematics and Modeling

Plovdiv University, BULGARIA

Fractional calculus has attracted much attention in the literature since it plays an important role in many fields of science and engineering. For example the behavior of many systems, such as physical phenomena having memory and genetic characteristics, can be adequately modeled by fractional differential systems. At the same time in real life there are many processes and phenomena that are characterized by rapid changes in their state. In connection with modeling of these phenomena the fractional differential equations were extended to impulsive fractional differential equations. In the talk an overview of the literature on the statement of impulsive Caputo fractional differential equations with deterministic fixed points of impulsive moments is given. Two different concepts of solutions of impulsive Caputo fractional equations with fixed points of impulses are known and used in the literature. In the talk both approaches are presented and discussed. Their advantages and disadvantages are illustrated on several examples. The case of random impulses in fractional differential equations is given.