A study on controllability of impulsive fractional evolution equations via resolvent operators.

Summary: In this article, we study the controllability for impulsive fractional integro-differential evolution equation in a Banach space. The discussions are based on the Mönch fixed point theorem as well as the theory of fractional calculus and the $\alpha, \beta$-resolvent operator, we concern with the term $u'(\cdot)$ and finding a control $v$ such that the mild solution satisfies $u(b) = u_0$ and $u'(b) = u_0'$. Finally, we present an application to support the validity study.

MSC:

34K30 Functional-differential equations in abstract spaces
34K37 Functional-differential equations with fractional derivatives
34K45 Functional-differential equations with impulses
45J99 Integro-ordinary differential equations
47N20 Applications of operator theory to differential and integral equations
93B05 Controllability

Keywords: controllability; measure of noncompactness; mild solution; Mönch fixed point theorem

Full Text: DOI

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