



Existence Results for Mild Solution for a Class of Impulsive Fractional Stochastic Problems with Nonlocal Conditions

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Abstract: This paper is concerned with the existence of mild solutions for nonlocal impulsive fractional order functional stochastic differential equations with delay. The existence and uniqueness results are shown by using the fixed point technique in a real Hilbert space. Finally, we illustrate the uniqueness result by an example involving partial derivatives.

Keywords: *fractional differential equation, existence and uniqueness, impulsive effects, stochastic differential equation.*

Mathematics Subject Classification (2010): 26A33, 34A12, 34A37, 34K50.

1 Introduction

The modeling with stochastic differential equations has attracted many authors due to its various applications in physics, biology, mathematical finance, etc (see [29, 31, 33] and references therein). The issues related to the existence and uniqueness for such model are widely studied by many authors and one can see the contribution in [5, 7, 18, 19, 34, 35, 37] and references therein. Recently, Das et al. [15] studied a fractional stochastic model with deviating argument and successfully applied the Faedo-Galerkin approximation method to prove the existence results. Benchaabane et al. [7] examined the Sobolev-type fractional stochastic model and established the existence and uniqueness of mild solutions via Picard's iteration technique.

Recently, the modeling with fractional differential equations has gained considerable importance due to its numerous applications in various fields of science and engineering,

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