



Existence and Uniqueness of Solution for Stochastic Nonlocal Random Functional Integral Equation

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Abstract: In this paper, we use Banach's fixed point theorem to establish sufficient conditions which guarantee the existence and uniqueness of the solution for a stochastic nonlocal random functional integral equation. As applications, an example is presented to illustrate our obtained results.

Keywords: *stochastic differential equation; existence; uniqueness; stochastic integral equations; fixed point theorem*

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1 Introduction

Stochastic differential equations (SDEs) play an important role in characterizing many social, physical, biological, and engineering problems. The theory of SDEs has developed quickly, the investigation of SDEs has attracted considerable attention of researchers, and many qualitative theories of SDEs have been obtained (see [2, 4, 8]).

In the last two decades, the existence and uniqueness of solution for SDEs have been considered in many publications such as [1, 5, 7, 9, 10].

When random fluctuations have great effects on the parameters and evolution in the mathematical model which describes a certain phenomenon, a stochastic differential equation should be the starting point for deriving the suitable model. Recently, nonlocal stochastic models were introduced by many authors to describe the evolution of the

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