Existence results for a k-dimensional system of multi-term fractional integro-differential equations with anti-periodic boundary value problems

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Abstract

In this paper, we establish the existence and uniqueness of solutions for a k-dimensional system of multi-term fractional integro-differential equations with antiperiodic boundary conditions by applying some standard fixed point results. We include an example to show the applicability of our results.

Keywords: Caputo fractional derivative, k-dimensional system, fractional integro-differential equations, Fixed point
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1 Introduction

Fractional differential and integro-differential equations have been proved that they are very valued tools in the modeling of many phenomena in various fields of science and engineering, such as, viscoelasticity, electrochemistry, electromagnetism, economics, optimal control and so forth. Anti-periodic boundary value problems occur in the mathematical modeling of a variety of physical processes (see for example, [1], [2]). The study of a coupled system of fractional differential equations is also very significant because this kind of system can often occur in applications (see for example, [3], [4]).

Let $T > 0$ and $I = [0, T]$. In this paper, we study the existence and uniqueness of so-

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