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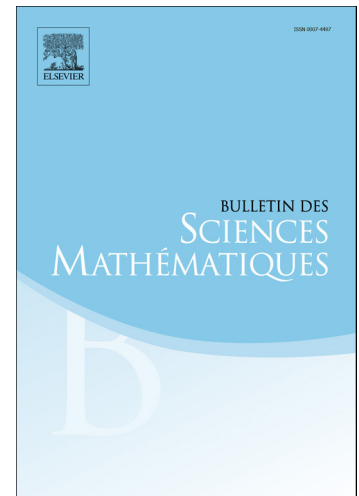
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Fractional Order Differential Switched Systems with Coupled Nonlocal Initial and Impulsive Conditions

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Abstract

In this paper, we discuss a new class of fractional order differential switched systems with coupled nonlocal initial and impulsive conditions in \mathbb{R}^n . We firstly derive a solution formula for this system. Secondly, we utilize three well-known fixed point methods to present the existence results. Moreover, we use Schauder topological degree theory to show a new existence result for resonant case: Landesman-Lazer conditions. Finally, we introduce the concepts of Ulam's type stability and present new stability results in the space of fractional version piecewise continuous functions.

Keywords: Fractional order differential switched systems, Nonlocal impulsive conditions, Solutions, Existence, Stability.

2010 MSC: 92D25, 26A33, 34A34, 45G05.

1. Introduction

There are some works on the existence results for initial problems of first order nonlinear differential systems with different nonlocal conditions [1, 2, 3, 4, 5]. With the rapid development of fractional calculus in modern times, fractional calculus arise naturally in various areas of mechanics, electricity, biology, control theory and signal processing, etc. [6, 7, 8, 9]. In fact, fractional order differential equations have attracted the great attention

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