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GENERALIZED FRACTIONAL DIFFERENTIAL EQUATIONS AND INCLUSIONS EQUIPPED WITH NONLOCAL GENERALIZED FRACTIONAL INTEGRAL BOUNDARY CONDITIONS

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ABSTRACT. In this paper, we establish sufficient criteria for the existence of solutions for generalized fractional differential equations and inclusions supplemented with generalized fractional integral boundary conditions. We make use of the standard fixed point theorems for single-valued and multi-valued maps to obtain the desired results, which are well illustrated with the aid of examples.

1. Introduction

Fractional calculus is a branch of mathematical analysis dealing with the study of derivatives and integrals of non-integer order. Differential equations involving fractional order derivatives are termed as fractional order differential equations and find useful applications in physics, chemical technology, population dynamics, biotechnology, economics, viscoelasticity, control theory of dynamical systems, electrical networks optics and signal processing, rheology etc. For details and examples, we refer the reader to the books [3], [12], [17], [20], [23], [24] and a series of articles [1], [2], [4]–[8] and the references cited therein.

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