



# Existence of solutions for impulsive integral boundary value problems of fractional order

## Bashir Ahmad<sup>a</sup>, S. Sivasundaram<sup>b,\*</sup>

<sup>a</sup> Department of Mathematics, Faculty of Science, King Abdulaziz University, P.O. Box 80203, Jeddah 21589, Saudi Arabia <sup>b</sup> Department of Mathematics, Embry-Riddle Aeronautical University, Daytona Beach, FL 32114, USA

#### ARTICLE INFO

#### Article history: Received 12 August 2009 Accepted 3 September 2009

Keywords: Fractional differential equations Impulse Integral boundary conditions Existence Fixed point theorem

### ABSTRACT

In this paper, we prove some existence results for a boundary value problem of nonlinear impulsive differential equations of fractional-order  $q \in (1, 2]$  with integral boundary conditions by applying the contraction mapping principle and Krasnoselskii's fixed point theorem.

© 2009 Elsevier Ltd. All rights reserved.