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**A nonlocal boundary value problem for a nonlinear fractional differential equation with two indices**

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**Abstract**

This paper is devoted to a study of a nonlocal boundary value problem for a nonlinear differential equation depending on two fractional orders  $\alpha, \beta \in (1, 2]$ . The problem is inverted and an equivalent integral equation is constructed; as applications, the contraction mapping principle and a Krasnosel'skii fixed point theorem are applied to obtain sufficient conditions for the existence of solutions. An example illustrates the results. In the case that  $\alpha = \beta = 2$ , results for fourth order ordinary differential equations are obtained.

**Author Keywords**

Differential equations of fractional order; Existence of solutions; Fixed point theorem; Nonlocal boundary conditions

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