EXISTENCE OF SOLUTIONS FOR A COUPLED SYSTEM OF NONLINEAR FRACTIONAL DIFFERENTIAL EQUATIONS AT RESONANCE

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Abstract. In this article, we investigate the existence of solutions for a coupled differential system of fractional differential equations at resonance. The existence results of solutions are obtained by using the coincidence degree theory. In addition, an example is presented to demonstrate the application of our main results.

1. Introduction

Fractional differential equations have received considerable attention in the recent years due to their wide applications in engineering, physics, economy and control theory, (see [4], [10]). Many papers on boundary value problems for fractional differential equations have appeared (see [1]–[3], [6]–[9], [11]–[17]). In papers [1], [12], [13], [17], the existence of solutions to coupled systems of fractional differential equations at nonresonance has been given. In papers [3], [6]–[9], [14], [16], the solvability of fractional differential equations at resonance has been investigated.