EXACT CONTROLLABILITY OF FRACTIONAL INTEGRO-DIFFERENTIAL SYSTEMS OF ORDER $\alpha \in (1, 2]$ WITH DEVIATED ARGUMENT

M. MUSLIM$^1$ AVADHESH KUMAR$^2$ AND RAVI P. AGARWAL$^3$

Abstract. In this paper, we consider a control system of fractional order $\alpha \in (1, 2]$ with deviated argument in a Banach space $X$. We used the strongly continuous $\alpha$-order cosine family of linear operators and Banach fixed point method to study the exact controllability. Finally, we give an example to illustrate the application of the result.

REFERENCES


2010 Mathematics Subject Classification. 34A08, 34K30, 93B05, 93C25.

Key words and phrases. Fractional differential systems with deviated argument, Fractional cosine family, Exact controllability, Banach fixed point theorem.


Received 28 February 2014

1,2 School of Basic Sciences, Indian Institute of Technology Mandi, Kamand (H.P.) - 175 005, India
3 Department of Mathematics, Texas A and M University - Kingsville, 700 University Blvd. Kingsville, TX 78363-8202 USA
E-mail address: 1 muslim@iitmandi.ac.in, 2 soni.iitkgp@gmail.com, 3 Ravi.Agarwal@tamuk.edu