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Nicolaus Copernicus University in Toruń

CONTROLLABILITY ANALYSIS OF DAMPED ELASTIC SYSTEMS USING SEQUENCE METHOD

Haide Gou

Abstract. In this paper, we are focused on the existence of mild solutions and approximate controllability for a class of Volterra–Fredholm type integro-differential damped elastic systems in Banach spaces. Firstly, the existence of mild solution is obtained by means of Banach fixed point theorem as well as operator semigroup theory. Secondly, the sufficient conditions of approximate controllability for our desired problem are formulated and proved, in order to test the approximate controllability results, the sequence method is used without assuming that the corresponding linear system is approximately controllable. Finally, an example is given to illustrate the theory.

1. Introduction

The vibration problem of elastic beams, which constitutes a notably significant branch within infinite dimensional dynamic systems, has attracted extensive attention and been highly regarded by scholars from diverse professional

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