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Approximate controllability of fractional neutral evolution systems of hyperbolic type.

Summary: In this paper, we deal with fractional neutral evolution systems of hyperbolic type in Banach spaces. We establish the existence and uniqueness of the mild solution and prove the approximate controllability of the systems under different conditions. These results are mainly based on fixed point theorems as well as constructing a Cauchy sequence and a control function. In the end, we give an example to illustrate the validity of the main results.

MSC:

34-XX Ordinary differential equations
26A33 Fractional derivatives and integrals
34A12 Initial value problems, existence, uniqueness, continuous dependence and continuation of solutions to ordinary differential equations
34K37 Functional-differential equations with fractional derivatives
35A01 Existence problems for PDEs: global existence, local existence, non-existence
93B05 Controllability

Keywords:

approximate controllability; mild solution; fractional neutral systems; existence and uniqueness

Full Text: DOI

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