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Existence and Uniqueness of the Optimal Control in Hilbert Spaces for a Class of Linear Systems

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ABSTRACT

We analyze the existence and uniqueness of the optimal control for a class of exactly controllable linear systems. We are interested in the minimization of time, energy and final manifold in transfer problems. The state variables space X and, respectively, the control variables space U, are considered to be Hilbert spaces. The linear operator T(t) which defines the solution of the linear control system is a strong semigroup. Our analysis is based on some results from the theory of linear operators and functional analysis. The results obtained in this paper are based on the properties of linear operators and on some theorems from functional analysis.

KEYWORDS

Existence and Uniqueness, Optimal Control, Controllable Linear Systems, Linear Operator

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