NONLOCAL PROBLEMS FOR INTEGRODIFFERENTIAL EQUATIONS VIA RESOLVENT OPERATORS AND OPTIMAL CONTROLS

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Abstract

In this work, we mainly consider a class of integrodifferential equations with a nonlocal initial conditions. We suppose that the linear part has a resolvent operator $R(t)$ in the sense given by Grimmer. By using Hölder inequality, $p$-mean continuity and Schauder’s fixed Theorem, we firstly formulate some existence results of mild solutions by considering the two cases of the resolvent operator $R(t)$; the nonlinear terms $f$ and $h$ and the nonlocal item $g$. Secondly the existence of optimal pairs of systems governed by an integrodifferential equation with nonlocal conditions are presented. An example is given to serve as an illustration of the theoretical results.

\textbf{Keywords:} integrodifferential equation, resolvent operator, mild solution, fixed point theorem, optimal control.

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References


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