ON A NONLOCAL BOUNDARY VALUE PROBLEM FOR FIRST ORDER LINEAR FUNCTIONAL DIFFERENTIAL EQUATIONS

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Consider the problem

$$\mathrm{u}'(t) = \ell(u)(t) + q(t) \tag{1}$$

$$\mathrm{u(a)} \ = \int_a^b u(s)d\mu(s) + c, \tag{2}$$

where $\ell : C([a,b];\mathbb{R}) \longrightarrow L([a,b];\mathbb{R})$ is a linear bounded operator, $q \in L([a,b];\mathbb{R})$, μ is a nondecreasing function of bounded variation and $c \in \mathbb{R}$.

In the paper, the nonimprovable, in a certain sense, effective sufficient conditions are established guaranteeing the unique solvability of the problem (1), (2).