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A CLASS OF FUNCTIONAL-INTEGRAL EQUATIONS VIA PICARD OPERATOR TECHNIQUE *

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Dedicated to Professor Mihail Megan
on the occasion of his 70th anniversary

Abstract

Let $\mathbb{B}$ be a Banach space, $\alpha \leq a < b \leq \beta$, $K \in C([\alpha,\beta]^2 \times \mathbb{B}^2, \mathbb{B})$, $g \in C([\alpha,\beta],\mathbb{B})$ and $h \in C([\alpha,\beta],[\alpha,\beta])$. In this paper, using the Picard operator technique, we will study, in $C([\alpha,\beta],\mathbb{B})$, the following integral equation

$$x(t) = \int_a^b K(t,s,x(s),x(h(s))ds, \ t \in [\alpha,\beta].$$

MSC: 45G10; 47H10; 47H30; 45M10; 45N05.

keywords: weakly Picard operator; functional-integral equation; successive approximations; data dependence; Ulam stability; Gronwall lemma.

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