RETARDED FUNCTIONAL DIFFERENTIAL EQUATIONS IN BANACH SPACES AND HENSTOCK-KURZWEIL-PETTIS INTEGRALS

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Abstract

We prove an existence theorem for the equation \( x' = f(t, x_t), \)
\( x(\Theta) = \varphi(\Theta), \) where \( x_t(\Theta) = x(t + \Theta), \) for \( -r \leq \Theta < 0, \) \( t \in I_a, \)
\( I_a = [0, a], a \in \mathbb{R}^+, \) in a Banach space, using the Henstock-Kurzweil-Pettis integral and its properties. The requirements on the function \( f \) are not too restrictive: scalar measurability and weak sequential continuity with respect to the second variable. Moreover, we suppose that the function \( f \) satisfies some conditions expressed in terms of the measure of weak noncompactness.

Keywords and phrases: pseudo-solution, Pettis integral, Henstock-Kurzweil integral, Henstock-Kurzweil-Pettis integral, Cauchy problem.

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References


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