AN INTEGRAL EQUATION RELATED TO AN EPIDEMIC MODEL VIA WEAKLY PICARD OPERATORS TECHNIQUE IN A GAUGE SPACE

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Abstract. In the paper Qualitative behavior of an integral equation related to some epidemic model (Demonstratio Mathematica, Vol. XXXVI, No 3/2003, 603-609) the author Eva Brestovanska has considered the integral equation

\[ x(t) = \left[ g_1(t) + \int_0^t A_1(t-s)F_1(s, x(s))\,ds \right] \cdots \left[ g_p(t) + \int_0^t A_p(t-s)F_p(s, x(s))\,ds \right], \quad t \geq 0. \]

In this paper we shall study by weakly Picard technique operators in a gauge space: the existence, uniqueness and data dependence such as the continuity, smooth dependence on parameter for the solution of the following integral equation

\[ x(t) = \left[ g_1(t) + \int_0^t K_1(t,s, x(s))\,ds \right] \cdot \left[ g_2(t) + \int_0^t K_2(t,s, x(s))\,ds \right], \quad t \in [0, \infty). \]


Key Words and Phrases: Picard operator, gauge spaces, fixed point, integral equation.

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REFERENCES


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