ON INFINITE SYSTEMS OF NONLINEAR INTEGRAL EQUATIONS IN TWO VARIABLES IN BANACH SPACE $BC(\mathbb{R}_+ \times \mathbb{R}_+, c_0)$

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Abstract. In this paper, the solvability of an infinite system of integral equations of the Volterra–Hammerstein type in Banach space $BC(\mathbb{R}_+ \times \mathbb{R}_+, c_0)$ is examined. Technique associated with the measure of noncompactness plays the most important role in adopted analysis and authors present an example to validate the applicability of the result.

1. Introduction

The use of integral equations in describing a variety of real-world events is well-known, and they play an important role in nonlinear functional analysis. Evidently, there are connections between the theory of integral equations and the research of differential equations (see [1], [4], [8]–[10], [18], [19]). The concept of measure of noncompactness has recently been used to investigate the existence and behaviour of nonlinear integral equation solutions (see [6], [5], [12], [14], [17]–[20]).

The solutions of infinite systems of integral equations that are defined on $\mathbb{R}_+ = [0, \infty)$ and $\mathbb{R}_+ \times \mathbb{R}_+$ have only recently been the subject of a few works (see [6], [5], [12], [15]). When examining such solutions, it is necessary to build

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