

DOCTORAL DISSERTATION ABSTRACT

Title: Application of certain measures of noncompactness in the existence theory of infinite systems of integral equations

Author: Weronika Paulina Woś MSc

Promoters: Józef Banaś, PhD, DSc, Prof.; Agnieszka Chlebowicz, PhD

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The main subject of the doctoral dissertation are infinite systems of nonlinear quadratic Volterra-Hammerstein integral equations. The main goal is to investigate sufficient conditions for the existence of solutions of such systems, which are defined on the real half-axis \mathbb{R}_+ . For this purpose, the Darbo fixed point theorem was used in conjunction with the theory of measures of noncompactness. Suitable measures of noncompactness have been constructed in the space $BC(\mathbb{R}_+, E)$, which consists of functions defined, continuous and bounded on the real half-axis \mathbb{R}_+ , with values in a given infinite-dimensional Banach space E . Moreover, it was assumed that an axiomatically defined measure of noncompactness is given in the space E . In particular, the space of real bounded sequences l_∞ has been considered as the space E . The tools and methods used in the work allow to obtain existence theorems for infinite systems of integral equations, which are defined on \mathbb{R}_+ and satisfy certain imposed conditions.

Weronika Woś