Hausdorff measure of noncompactness for some paranormed λ-sequence spaces of non-absolute type

Elahe Abyar*
Islamic Azad University Shahrekord Branch

Mohammad Bagher Ghaemi
Iran University of Science and Technology

Abstract

Recently some new generalize sequence spaces related to the spaces $l_\infty(p), c(p)$ and $c_0(p)$ have been defined. In this work, we establish estimates for the operator norms and the Hausdorff measure of noncompactness of certain matrix operators on this spaces that are paranormed spaces by the matrix classes (X, Y), where $X \in \{c_0(\lambda, p), c(\lambda, p), l_\infty(\lambda, p)\}$ and $Y \in \{c_0(q), c(q), l_\infty(q)\}$. Further, we apply our results to obtain corresponding subclasses of compact matrix operators.

Keywords: Hausdorff measure of noncompactness; λ-sequence spaces; paranormed spaces
Mathematics Subject Classification [2010]: 13D45, 39B42

1 Introduction

We denote W for the space of all real-valued sequences. Any vector subspace of W is called a sequence space.

Definition 1.1. Definitions of K-space, FK-space, BK-space and AK-property are in [2]. If $X \supset \varphi$ is a BK-space and $a = (a_k) \in \mathbb{W}$, then we defined

$$\| a \|_X^* = \sup_{x \in S_X} |\sum_{k=0}^{\infty} a_k x_k|, \tag{1}$$

provided the expression on the right hand side exist and is finite.

Let X and Y be any two sequence spaces and $A = (a_{nk})$ be any infinite matrix of real numbers a_{nk}, where $n, k \in \mathbb{N}$ with $\mathbb{N} = \{0, 1, 2, \ldots\}$. By (X, Y), we denote the class of all infinite matrices that map X into Y.

*Speaker