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MATRIX TRANSFORMATIONS IN SOME SEQUENCE SPACES

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Abstract: In this paper, we represent some sequence spaces and give the characterization of $(l(p), l_\infty)$, $(l(p), c)$, (w_p, c) and $(c_0(p), c_0(q))$.

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Introduction

Let X, Y be two nonempty subsets of the space of all complex sequences and $A = (a_{nk})$ an infinite matrix of complex numbers $a_{nk}(n, k = 1, 2, ...)$. For every $x = (x_k) \in X$ and every integer n we write

$$A_n(x) = \sum_{k=1}^{\infty} a_{nk} x_k$$

The sequence $Ax = (A_n(x))$, if it exists, is called the transformation of x by the matrix A. We say that $A \in (X, Y)$ if and only if $Ax \in Y$ when ever $x \in X$.
If $p_k > 0$ and $\sup p_k < \infty$, we define (see Maddox [1])

$$l(p) = \left\{x : \sum k|x_k|^{pk} < \infty\right\}$$

$$c(p) = \left\{x : |x_k - 1|^{pk} \to 0 \text{ for some } 1\right\}$$

$$c_0(p) = \left\{x : |x_k|^{pk} \to 0\right\}$$

$$l_\infty(p) = \left\{x : sup|x_k|^{pk} < \infty\right\}$$