ON GENERALIZED DUALS OF SOME SEQUENCE SPACES

AHMET ŞAHİNER

ABSTRACT: In this paper the sequence space $\Delta l_{\infty}(p,q)$ is defined. Also generalized duals of some new defined sequence spaces are given.

1. INTRODUCTION

Let X be a complex (or real) linear space with the zero element θ, and Let $X=(X,q)$ be a seminormed space with the seminorm q. By $S(X)$, we denote the X-valued sequences space. $S(X)$ is a linear space with the following operations:

$$x+y=(x_k+y_k)$$
$$\lambda(x)=(\lambda x_k)$$

where $x=(x_k)$ and $y=(y_k)$ are in X and λ is a scalar.

We let $p=(p_k)$ be a sequence satisfying $0<p_k\leq \sup_k p_k=H$ for any $k\in N$.

The sequence space is defined as follows:

$$\Delta l_{\infty}(p,q)=\left\{x\in S(X):\sup_k[q(\Delta x_k)]^{p_k}<\infty\right\}$$

where $\Delta x_k=x_k-x_{k+1}$.

If we choose X=C and q=|.| we get $\Delta l_{\infty}(p)$ as in [6].

2. MAIN RESULTS

Theorem 1. $\Delta l_{\infty}(p,q)$ is a linear space.

Proof. Since $S(X)$ is a linear space and $\Delta l_{\infty}(p,q)\subseteq S(X)$, it is sufficient to show that $\lambda x+\mu y\in\Delta l_{\infty}(p,q)$ for any $x,y\in\Delta l_{\infty}(p,q)$ and scalars λ,μ. We will use the following well-known inequality: for any complex numbers a_k, b_k,

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