

On Paranorm Zweier i-Convergent Sequence Spaces

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ABSTRACT

Abstract. In this article we introduce the Paranorm Zweier I-convergent sequence spaces $\mathcal{Z}^I(q)$, $\mathcal{Z}_0^I(q)$ and $\mathcal{Z}_\infty^I(q)$ for $q = (q_k)$, a sequence of positive real numbers. We study some topological properties, prove the decomposition theorem and study some inclusion relations on these spaces.

The given sequence spaces are defined as **In this article we introduce the following classes of sequence spaces.**

$$\mathcal{Z}^I(q) = \{x = (x_k) \in \omega : \{k \in \mathbb{N} : |Z^p x - L|^{q_k} \geq \epsilon\} \in I, \text{ for some } L \in \mathbb{C}\};$$

$$\mathcal{Z}_0^I(q) = \{x = (x_k) \in \omega : \{k \in \mathbb{N} : |Z^p x|^{q_k} \geq \epsilon\} \in I\};$$

$$\mathcal{Z}_\infty^I(q) = \{x = (x_k) \in \omega : \sup_k |Z^p x|^{q_k} < \infty\}.$$

We also denote by

$$m_{\mathcal{Z}}^I(q) = \mathcal{Z}_\infty^I(q) \cap \mathcal{Z}^I(q)$$

and

$$m_{\mathcal{Z}_0}^I(q) = \mathcal{Z}_\infty^I(q) \cap \mathcal{Z}_0^I(q)$$

Where $q = (q_k)$, is a sequence of positive real numbers.

Keywords: *Ideal, I-iter, I-convergence, I-nullity, paranorm.*