ON ASYMPTOTICALLY EQUIVALENCE OF ORDER α FOR SEQUENCE OF SETS USING σ

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ABSTRACT. This paper presents the following definitons which is a natural combination of the definition for asymptotically equivalent, λ-statistical convergence and σ-convergence. Two set sequences $\{A_k\}$ and $\{B_k\}$ are said to be $S_{\sigma,\lambda}^{\alpha}$-asymptotically equivalent (Wijsman sense) of multiple L if for each $\varepsilon > 0$, for each $x \in X$,

$$\lim_{n \to \infty} \frac{1}{\lambda_n^{\alpha}} \left| \left\{ k \in I_n : \left| d\left(x; A_{\sigma^k(m)}, B_{\sigma^k(m)}\right) - L \right| \geq \varepsilon \right\} \right| = 0,$$

uniformly in $m = 1, 2, 3, ...,$ (denoted by $\{A_{\sigma^k(m)}\} \overset{S_{\sigma,\lambda}^{\alpha}}{\sim} \{B_{\sigma^k(m)}\}$) . Also, we introduce the concept of $S_{\sigma,\theta}^{\alpha}$-asymptotically equivalent (Wijsman sense) of multiple L for the set sequences $\{A_k\}$ and $\{B_k\}$ and give some inclusion relations. Using the definition of $S_{\sigma,\theta}^{\alpha}$-asymptotically equivalence, we shall prove $S_{\sigma,\theta}^{\alpha}$-asymptotically equivalent analogues of Fridy and Orhan's theorems in [11] and analogues results of Das and Patel in [8] shall also be presented.

1. INTRODUCTION

Fast [9] presented an interesting generalization of the usual sequential limit which he called statistical convergence for number sequences.

Mursaleen [29] defined λ-statistical convergence by using the λ sequence. He denoted this new method by S_λ and found its relation to statistical convergence, $[C, 1]$-summability and $[V, \lambda]$-summability. The concept of lacunary statistical convergence was defined by Fridy and Orhan [11]. By using uniform invariant density, invariant statistical convergence and $\sigma-$statistically convergence and lacunary σ-statistically convergence were given in [16].

Asymptotic equivalence of sequences was introduced by Pobyvanets [19] ; Marouf's work [14] was extension of Pobyvanets's work. In, 2003, Patterson [17] extended these concepts by presenting an asymptotically statistical equivalent analog of these definitions and natural regularity conditions for nonnegative summability matrices.