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ON $\mathcal{I}_2$-ASYMPTOTICALLY λ^2-STATISTICAL EQUIVALENT DOUBLE SEQUENCES

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Abstract. In this paper, we introduce the concept of $\mathcal{I}_2-$asymptotically λ^2-statistically equivalence of multiple L for the double sequences (x_{kl}) and (y_{kl}). Also we give some inclusion relations.

1. Introduction

Pobyvanets [14] introduced the concept of asymptotically regular matrices which preserve the asymptotic equivalence of two nonnegative numbers sequences. In 1993, Marouf [9] presented definitions for asymptotically equivalent and asymptotic regular matrices. In 2003, Patterson extended these concepts by prensenting an asymptotically statistical equivalent analog of these definitions and natural regularity conditions for nonnegative summability matrices. Later these definitions extended to λ-sequences by Savas and Başarır in [18]. Esi and Acıkgöz [1] extended the definitions prensented in [18] to double λ^2-sequence.

2. Preliminaries and Background

In this section, we recall some definitions and notations, which form the base for the present study.

The notion of statistical convergence depends on the density (asymptotic or natural) of subsets of natural numbers $\mathbb{N}$. A subsets of natural numbers $\mathbb{N}$ is said to have natural density $\delta(E)$ if

$$\delta(E) = \lim_{n\to\infty} \frac{1}{n} |\{k \leq n : k \in E\}| \text{ exists.}$$

Definition 2.1. [4] A real or complex number sequence $x = (x_k)$ is said to be statistically convergent to L if for every $\varepsilon > 0$,

$$\lim_{n\to\infty} \frac{1}{n} |\{k \leq n : |x_k - L| \geq \varepsilon\}| = 0.$$

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