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ON WIJSMAN $\mathcal{I}_2$-LACUNARY STATISTICAL CONVERGENCE FOR DOUBLE SET SEQUENCES

ABSTRACT. The aim of present work is to present some inclusion relations between the concepts of Wijsman $\mathcal{I}_2-$lacunary statistical convergence and Wijsman strongly $\mathcal{I}_2-$lacunary convergence for double sequences of sets. Also we study the concepts of Wijsman $\mathcal{I}_2-$statistical convergence, Wijsman $\mathcal{I}_2-$ lacunary statistical convergence double sequences of sets and investigate the relationship among them.

KEY WORDS: $\mathcal{I}-$convergence, lacunary, double sequences.

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1. Introduction

Hill [9] was the first who applied methods of functional analysis to double sequence. A lot of useful developments of double sequences in summability methods can be found in Limayea and Zeltser [15], Altay and Başar [1].

Convergence of a sequence of real numbers has been extended to statistical convergence independently by Fast [7] and Schoenberg [24]. This notion was extended to the double sequences by Mursaleen and Edely [16].

Lacunary statistical convergence was defined by Fridy and Orhan [8]. Also, Fridy and Orhan gave the relationships between the lacunary statistical convergence and the Cesàro summability. This notion was extended to the double sequences by Savaş, Patterson [23].

P. Kostyrko et al. [13] introduced the concept of $\mathcal{I}-$convergence of sequences in a metric space and studied some properties of this convergence. The notion of lacunary ideal convergence of real sequences was introduced in [26, 27]. Das, Kostyrko, Wilczyski and Malik [6] defined the notion of $\mathcal{I}-$convergence of double sequences in a metric space and studied some properties of this convergence.

Convergence of numbers has been extended by several authors to convergence of sequences of sets (see Baronti and Papini [2]; Beer [3], [4]; Nu-