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Welcome to New Trends in Mathematical Sciences

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I -convergence of filters

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Abstract: In this paper, we have introduced the idea of I -convergence of filters and studied its various properties. We have proved the necessary and sufficient condition for a filter to be I -convergent.

Keywords: Ideal, filters, ideal convergence, admissible ideal, Hausdorff space.

1 Introduction

The concept of convergence of a sequence of real numbers has been extended to statistical convergence independently by H. Fast [4] and I. J. Schoenberg [20]. Any convergent sequence is statistically convergent but the converse is not true [17]. Moreover, a statistically convergent sequence need not even be bounded [17]. Let \mathbb{N} denotes the set of natural numbers. If $K \subset \mathbb{N}$, then K_n will denote the set $\{k \in K : k \leq n\}$ and $|K_n|$ stands for the cardinality of K_n . The natural density of K is defined by

$$d(K) = \lim_n \frac{|K_n|}{n},$$

if the limit exists [5,16].

The concept of I -convergence of real sequences [6,7] is a generalization of statistical convergence which is based on the structure of the ideal I of subsets of the set of natural numbers. The notion of ideal convergence for single sequences was first defined and studied by Kostyrko et al. [6]. Mursaleen et al. [12] defined and studied the notion of ideal convergence in random 2-normed spaces and construct some interesting examples. Several works on I -convergence and statistical convergence have been done in [1,3,6,7,8,11,12,13,14,15,19].