

A generalized statistical convergence via ideals in 2-normed spaces

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Abstract

In this paper we introduce and investigate lacunary convergence, \mathcal{I} -statistical convergence, strongly lacunary convergence, strongly \mathcal{I} -lacunary convergence, strongly \mathcal{I}^* -lacunary convergence and strongly \mathcal{I} -lacunary Cauchy sequences in 2-normed spaces and study their certain properties. Also, we give the notion of \mathcal{I} -statistically pre-Cauchy sequences in 2 normed. We mainly show that \mathcal{I} -statistical convergence implies \mathcal{I} -statistically pre-Cauchy condition and give certain sufficient conditions for the converse to be true.

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Keywords: Statistical convergence, Lacunary sequences, pre-Cauchy, normed space, \mathcal{I} -convergence.

1 Introduction

The concept of convergence of a sequence of real numbers has been extended to statistical convergence independently by Fast [8] and Schoenberg [26].

The notion of \mathcal{I} -convergence was studied at initial stage by Kostyrko et al. [2]. Kostyrko et al. [3] gave some of basic properties of \mathcal{I} -convergence and dealt with extremal \mathcal{I} -limit points. Later on it was studied by Šalát et al. [4], Tripathy and Hazarika [5] and many others. Recently, Das et al. [1] introduced new notions, namely \mathcal{I} -statistical convergence and \mathcal{I} -lacunary statistical convergence by using ideal.

Fridy and Orhan [7] introduced the concept of lacunary statistical convergence. Some work on lacunary statistical convergence can be found in [9]. Tripathy et al. [13] introduced the concepts of \mathcal{I} -lacunary convergent