New Sequence Spaces with Respect to a Sequence of Modulus Functions

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Abstract

In this paper, we introduce the notions of \( A^l \)-invariant convergence, \( A'' \)-invariant convergence with respect to a sequence of modulus functions and establish some basic theorems. Furthermore, we give some properties of \( A^{l_{\sigma}} \)-Cauchy sequence and \( A^{l_{\sigma}} \)-Cauchy sequence. We basically study some connections between \( A^l \)-invariant statistical convergence and \( A^l \)-invariant lacunary statistical convergence with respect to a sequence of modulus functions and between strongly \( A^l \)-invariant convergence and \( A^l \)-invariant lacunary statistical convergence with respect to a sequence of modulus functions. Also, we establish some inclusion relations between new concepts of \( l_{\sigma} \rightarrow \lambda \) statistically convergence and \( A^l \)-invariant statistically convergence with respect to a sequence of modulus functions.

Keywords: Lacunary invariant statistical convergence; Invariant statistical convergence; modulus function.

1. Introduction

The notion of statistical convergence of sequences of numbers was introduced by Fast [12]. Later on, statistical convergence turned out to be one of the most active areas of research in summability theory after the works of [15,29].