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SOME STATISTICALLY CONVERGENT SEQUENCE SPACES OVER GRADUAL NORMED LINEAR SPACE

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Abstract. In this article we introduce the notion of statistically convergent, statistically null, bounded statistically convergent and bounded statistically null sequence spaces with the concept of gradual norm and discuss some of their properties such as completeness, monotone, solidness, symmetricity, sequence algebra, convergence free and separability etc.

Keywords. Gradual number, statistical convergence, gradual normed linear spaces, monotone, solid space and symmetric space.

AMS (MOS) subject classification: 40D25, 40A35, 40A05.

1 Introduction

The idea of gradual real numbers as elements of fuzzy intervals was first introduced by Fortin et. al. [15] in 2008. Gradual real numbers are mainly known by their respective assignment function which is defined in the interval $(0, 1]$. So in some sense, every real number can be viewed as a gradual number with a constant assignment function. The gradual real numbers also obey all the algebraic properties of the classical real numbers and have been used in computation and optimization problems.

In 2011, Sadeqi and Azari [25] first introduced the concept of gradual normed linear space (GNLS). They studied various properties of the space from both the algebraic and topological points of view. Further progress in this direction has been occurred due to Ettefagh, Azari and Etemad [12, 13], Choudhury and Debnath [2, 3, 4, 5], Choudhury, Debnath and Esi [6], Kişi and Choudhury [20] and many others. For an extensive study on gradual real numbers [1, 9, 21, 29, 30, 31] can be addressed, where many more references can be found.

Throughout the paper w^G, ℓ_∞^G, c^G and c_0^G denotes collection of all, bounded, convergent and null sequences $x = (x_k)$ with gradual terms, respectively.