An estimate of Sumudu transforms for Boehmians

ABSTRACT

The space of Boehmians is constructed using an algebraic approach that utilizes convolution and approximate identities or delta sequences. A proper subspace can be identified with the space of distributions. In this paper, we first construct a suitable Boehmian space on which the Sumudu transform can be defined and the function space S can be embedded. In addition to this, our definition extends the Sumudu transform to more general spaces and the definition remains consistent for S elements. We also discuss the operational properties of the Sumudu transform on Boehmians and finally end with certain theorems for continuity conditions of the extended Sumudu transform and its inverse with respect to δ- and Δ-convergence.

Keyword: Boehmian spaces; Distributions; Sumudu transforms; The space $\mathbb{H}$; The space $\mathbb{H}(s)$.