
WEIGHTED APPROXIMATION BY A NEW TYPE EXPONENTIAL SAMPLING SERIES

Dilek Erdogan^{1,2*}, Tuncer Acar^{1,2}

¹*Department of Mathematics, Faculty of Science, Selcuk University, 42003, Konya, Türkiye*

²*Selcuk University, Faculty of Science, Department of Mathematics, Constructive Mathematical Analysis Research Laboratory (CMARL), Selcuklu, 42003, Konya, Türkiye*

ABSTRACT

This presentation focuses on analyzing the approximation behavior of Mellin-Steklov type exponential sampling operators of order r ($r \in \mathbb{N}$) acting on continuous functions within the framework of logarithmically weighted spaces. As a first step, we prove that these operators are well-defined in the considered functional spaces. Following this, we examine their convergence properties under these specific weighted conditions. To measure the speed of this approximation, we compute the quantitative rates of convergence by employing a suitable modulus of continuity in logarithmic weighted spaces. Finally, utilizing the Mellin-Taylor expansion, we derive a quantitative representation that explicitly describes the pointwise asymptotic behavior of the given operators.

Keywords Exponential sampling series · logarithmic weighted spaces · Mellin-Taylor expansion

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*Corresponding Author's E-mail: dilekozer@yahoo.com