

## Approximation of Periodic Functions Belonging to Lipschitz Classes by Product Matrix Means of Fourier Series

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**Abstract :** Various investigators have determined the degree of approximation of functions belonging to the classes  $W(L^r, \xi(t))$ ,  $Lip(\xi(t), r)$ ,  $Lip(\alpha, r)$ , and  $Lip\alpha$  using different summability methods with monotonicity conditions. Recently, Lal has determined the degree of approximation of the functions belonging to  $Lip\alpha$  and  $W(L^r, \xi(t))$  classes by using Cesàro-Nörlund  $(C^{1, Np})$ -summability with non-increasing weights  $\{p_n\}$ . In this paper, we shall determine the degree of approximation of  $2\pi$ -periodic functions  $f$  belonging to the function classes  $Lip\alpha$  and  $W(L^r, \xi(t))$  by  $C^{1, T}$ -means of Fourier series of  $f$ . Our theorems generalize the results of Lal and we also improve these results in the light of. From our results, we also derive some corollaries.

**Keywords :** Lipschitz classes, product matrix operator, signals, trigonometric Fourier approximation

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