

ON THE DEGREES OF APPROXIMATION OF FUNCTIONS BELONGING TO $L^p(\tilde{\omega})_\beta$ CLASS BY MATRIX MEANS OF CONJUGATE FOURIER SERIES

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Abstract. The results corresponding to some theorems of S. Lal [Tamkang J. Math., 31 (4) (2000), 279–288] and the results of the second and third authors [Banach Center Publ., in press] are shown. The same degrees of pointwise approximation as in mentioned papers by significantly weaker assumptions on considered functions are obtained. From presented pointwise results the estimation on norm approximation with significantly better degrees are derived.

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REFERENCES

- [1] S. LAL AND H. K. NIGAM, *Degree of approximation of conjugate of a function belonging to $Lip(\xi(t), p)$ class by matrix summability means of conjugate Fourier series*, Int. J. Math. Math. Sci. **27**, 9 (2001), 555–563.
- [2] S. LAL, *On the degree of approximation of conjugate of a function belonging to weighted $W(L^p, \xi(t))$ class by matrix summability means of conjugate series of a Fourier series*, Tamkang J. Math. **31**, 4 (2000), 279–288.
- [3] L. LEINDLER, *On the degree of approximation of continuous functions*, Acta Math. Hungar. **104**, 1–2 (2004), 105–113.
- [4] L. LEINDLER, *Integrability conditions pertaining to Orlicz space*, J. Inequal. Pure and Appl. Math. **8**, 2 (2007), Art. 38, 6 pp.
- [5] W. ŁENSKI, B. SZAL, *Approximation of functions belonging to the class $L^p(\omega)_\beta$ by linear operators*, Acta Comment. Univ. Tartu. Math. **13** (2009), 11–24.
- [6] W. ŁENSKI, B. SZAL, *Approximation of functions from $L^p(\tilde{\omega})_\beta$ by linear operators of conjugate Fourier series*, Banach Center Publ., in press.
- [7] K. QURESHI, *On the degree of approximation of functions belonging to the Lipschitz class by means of a conjugate series*, Indian J. Pure Appl. Math. **12**, 9 (1981), 1120–1123.
- [8] K. QURESHI, *On the degree of approximation of functions belonging to the class $Lip(\alpha, p)$ by means of a conjugate series*, Indian J. Pure Appl. Math. **13**, 5 (1982), 560–563.
- [9] B. SZAL, *A note on the uniform convergence and boundedness a generalized class of sine series*, Commentat. Math. **48**, 1 (2008), 85–94.
- [10] A. ZYGMUND, *Trigonometric series*, Cambridge, 2002.