

STRONG APPROXIMATION OF ALMOST PERIODIC FUNCTIONS

WŁODZIMIERZ ŁENSKI AND BOGDAN SZAL

Abstract. We consider summability methods generated by the class $GM(_2\beta)$. We generalize some related results of P. Pych-Taberska [Studia Math. XCVI (1990), 91–103] on strong approximation of almost periodic functions by their Fourier series and S. M. Mazhar and V.Totik [J. Approx. Theory, 60(1990), 174–182] on approximation of periodic functions by matrix means of their Fourier series.

Mathematics subject classification (2010): 42A24.

Keywords and phrases: Almost periodic functions, rate of strong approximation, summability of Fourier series.

REFERENCES

- A. AVANTAGGIATI, G. BRUNO AND B. IANNACCI, The Hausdorff-Young theorem for almost periodic functions and some applications, Nonlinear analysis, Theory, Methods and Applications, Vol. 25, No. 1, (1995), pp. 61–87.
- [2] A. D. BAILEY, Almost Everywhere Convergence of Dyadic Partial Sums of Fourier Series for Almost Periodic Functions, Master of Philosophy, A thesis submitted to School of Mathematics of The University of Birmingham for the degree of Master of Philosophy, September 2008.
- [3] A. S. Besicovitch, Almost periodic functions, Cambridge, 1932.
- [4] E. A. Bredikhina, On the best approximation of almost periodic functions by entire functions of finite order, Dokl. Akad. Nauk SSSR 117 (1957), 17–20 (in Russian).
- [5] L. LEINDLER, On the uniform convergence and boundedness of a certain class of sine series, Analysis Math., 27 (2001), 279–285.
- [6] L. LEINDLER, Integrability conditions pertaining to Orlicz space, J. Inequal. Pure and Appl. Math., 8 (2) (2007), Art. 38, 6 pp.
- [7] L. LEINDLER, A new extension of monotone sequence and its application, J. Inequal. Pure and Appl. Math., 7 (1) (2006), Art. 39, 7 pp.
- [8] L. LEINDLER, Strong approximation by Fourier series, Akadémiai Kiadó (Budapest, 1985).
- [9] B. L. LEVITAN, Almost periodic functions, Gos. Izdat. Tekh-Teoret. Liter., Moscov 1953 (in Russian).
- [10] S. M. MAZHAR AND V. TOTIK, Approximation of continuous functions by T-means of Fourier series, J. Approx. Theory, 60 (1990), 174–182.
- [11] P. PYCH-TABERSKA, Approximation properties of the partial sums of Fourier series of almost periodic functions, Studia Math. XCVI (1990), 91–103.
- [12] B. SZAL, On the degree of strong approximation of continuos functions by special matrix, J. Inequal. Pure and Appl. Math., 10, 4 (2009), Art. 111, 8 pp.
- [13] B. SZAL, A note on the uniform convergence and boundedness a generalized class of sine series, Commentat. Math., 48, 1 (2008), 85–94.
- [14] S. TIKHONOV, Trigonometric series with general monotone coefficients, J. Math. Anal. Appl., 326 (1) (2007), 721–735.
- [15] S. TIKHONOV, On uniform convergence of trigonometric series, Mat. Zametki, 81 (2) (2007), 304–310, translation in Math. Notes, 81 (2) (2007), 268–274.
- [16] S. TIKHONOV, Best approximation and moduli of smoothness: Computation and equivalence theorems, J. Approx. Theory, 153 (2008), 19–39.
- [17] A. ZYGMUND, Trigonometric series, Cambridge, 2002.



mia@ele-math.com