

SOME REVERSE l_p -TYPE INEQUALITIES INVOLVING CERTAIN QUASI MONOTONE SEQUENCES

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Abstract. In this paper, we give some l_p -type inequalities about sequences satisfying certain quasi monotone type properties. As special cases, reverse l_p -type inequalities for non-negative decreasing sequences are obtained. The inequalities are closely related to Copson's and Leindler's inequalities, but the sign of the inequalities is reversed.

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REFERENCES

- [1] E. T. COPSON, *Note on Series of Positive Terms*, J. London Math. Soc., S1–3 (1):49, 1928.
- [2] P. GAO, *On l^p norms of factorable matrices*, ArXiv e-prints, January 2013, 1301.3262.
- [3] G. H. HARDY, J. E. LITTLEWOOD, AND G. PÓLYA, *Inequalities*, Cambridge Mathematical Library. Cambridge University Press, Cambridge, 1988. Reprint of the 1952 edition.
- [4] A. A. KONYUSHKOV, *Best approximations by trigonometric polynomials and fourier coefficients*, Mat. Sb. N.S., **44** (3): 53–84, 1958, (Russian).
- [5] L. LEINDLER, *Über verschiedene Konvergenzarten trigonometrischer Reihen, III. Bedingungen in der Metrik von L^p* , Acta Sci. Math. (Szeged), **27**: 205–215, 1966.
- [6] L. LEINDLER, *Generalization of inequalities of Hardy and Littlewood*, Acta Sci. Math. (Szeged), **31**: 279–285, 1970.
- [7] L. LEINDLER, *Power-monotone sequences and Fourier series with positive coefficients*, JIPAM. J. Inequal. Pure Appl. Math., **1** (1): Article 1, 10, 2000.
- [8] M. K. POTAPOV, *A certain imbedding theorem*, Mathematica (Cluj), **14** (37): 123–146, 1972.
- [9] M. K. POTAPOV AND M. Q. BERISHA, *Moduli of smoothness and the Fourier coefficients of periodic functions of one variable*, Publ. Inst. Math. (Beograd) (N.S.), **26** (40): 215–228, 1979.
- [10] M. K. POTAPOV, B. V. SIMONOV, AND S. YU. TIKHONOV, *Mixed moduli of smoothness in L_p , $1 < p < \infty$: a survey*, Surv. Approx. Theory, **8**: 1–57, 2013.
- [11] T. M. VUKOLOVA, *Some properties of trigonometric series with monotonic coefficients*, Vestnik Moskov. Univ. Ser. I Mat. Mekh., (6): 18–23, 110, 1984.