Poincare Journal of Analysis & Applications
Vol. 2, No. 1 (2015), 37-47

DOI: 10.46753/pjaa.2015.v02i01.003

MULTIPLIERS FOR THE CONJUGATE SERIES OF A FOURIER SERIES

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Date of Receiving : 06. 06. 2015
Date of Acceptance : 25. 06. 2015

Abstract. In this paper, we obtain multipliers for the absolute Riesz summability of the conjugate series of a Fourier series which not only improves some of the results obtained by R.Mohanty [Proc. London Math. Soc., 52(1951), 295-320] and P. Chandra [J. Orissa Math. Soc., 30(No. 2)(2011), 1-12] but also provides some new results.

1. Definitions and Notations

Let $\lambda(\omega)$ be the type and $\eta > 0$ be the order of Riesz mean. Then $\sum_{n=1}^{\infty} a_n$ is said to be summable absolutely by the type $\lambda(\omega)$ and order $\eta > 0$ of Riesz mean, symbolically we write,

$$\sum_{n=1}^{\infty} a_n \in |R, \lambda(\omega), \eta|(\eta > 0) \tag{1.1}$$

if ([7]; Definition B)

$$\int_h^{\infty} \{\lambda^{(1)}(\omega)/\lambda^{(1+\eta)}(\omega)\}|\sum_{n<\omega}\{\lambda(\omega)-\lambda(n)\}^{\eta-1}\lambda(n)a_n|d\omega < \infty, \tag{1.2}$$

where h is a suitable positive number ([9], [10]) and

$$\lambda^{(1)}(\omega) = \frac{d}{d\omega}\lambda(\omega). \tag{1.3}$$

Throughout, we use the following notations for a real fixed x and all real values of δ :

$$\psi(t) = \frac{1}{2}\{f(x+t) - f(x-t)\} \tag{1.4}$$

$$\psi_1(t) = \frac{1}{t}\int_0^t \psi(u)du \tag{1.5}$$

$$\beta(t) = \psi(t) - \psi_1(t) \tag{1.6}$$

$$y_n^{\delta} = log^{-\delta}(n+1) \tag{1.7}$$

2010 *Mathematics Subject Classification.* 42A45, 42A50, 40G99.
Key words and phrases. Conjugate series, Multipliers, Absolute Riesz summability.
Communicated by. Shashank Goel