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# A STUDY ON QUASI POWER INCREASING SEQUENCES

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ABSTRACT. In the present paper, using a quasi $\beta$-power increasing sequence instead of an almost increasing sequence, a result of Bor and Seyhan [**5**] concerning the $\varphi - |C,\alpha|_k$ summability factors has been proved under weaker conditions. Also, this theorem generalizes some well-known results.

**1. Introduction.** A positive sequence $(b_n)$ is said to be almost increasing if there exists a positive increasing sequence $c_n$ and two positive constants $A$ and $B$ such that $Ac_n \leq b_n \leq Bc_n$, see [**1**]. Let $(\varphi_n)$ be a sequence of complex numbers, and let $\sum a_n$ be a given infinite series with partial sums $(s_n)$. We denote by $z_n^\alpha$ and $t_n^\alpha$ the $n$th Cesàro means of order $\alpha$, with $\alpha > -1$, of the sequence $(s_n)$ and $(na_n)$, respectively, i.e.,

$$z_n^\alpha = \frac{1}{A_n^\alpha} \sum_{v=0}^{n} A_{n-v}^{\alpha-1} s_v, \tag{1}$$

$$t_n^\alpha = \frac{1}{A_n^\alpha} \sum_{v=1}^{n} A_{n-v}^{\alpha-1} v a_v, \tag{2}$$

where

$$A_n^\alpha = O(n^\alpha), \quad \alpha > -1, \quad A_0^\alpha = 1 \text{ and } A_{-n}^\alpha = 0 \text{ for } n > 0. \tag{3}$$

The series $\sum a_n$ is said to be summable $\varphi - |C,\alpha|_k$, $k \geq 1$ and $\alpha > -1$, if (see [**2**])

$$\sum_{n=1}^{\infty} |\varphi_n (z_n^\alpha - z_{n-1}^\alpha)|^k < \infty. \tag{4}$$

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