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A RESULRT ON INDEXED ABSOLUTE MATRIX SUMMABILITY OF AN INFINITE SERIES

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ABSTRACT
In the present Article we established a result on "INDEXED ABSOLUTE MATRIX SUMMABILITY OF AN INFINITE SERIES" By generalizing the Theorem to $\varphi-\left|A, p_n ;\delta\right|_k, k\geq 1, \delta \geq 0$ *summability dealing with summability factors of infinite series, Bor. H.*

Keywords: Indexed Absolute matrix Summability, Summability Factor, Infinite Series, Almost increasing sequence, Hölder inequality, Minkowski inequality.

1. INTRODUCTION

Let $\sum a_n$ be an infinite series and $\{s_n\}$ be its sequence of partial sums. Let $\{p_n\}$ be a sequence of non-negative numbers with $P_n=\sum_{v=0}^{n} p_v \to \infty$, as $n\to\infty$ and $P_{-i}=p_{-i}=0,\ i\geq 1$. The sequence to sequence transformation

(1.1) $$t_n=\frac{1}{P_n}\sum_{v=0}^{n} p_v s_v$$

defines the $(\overline{N}, p_n)$-mean of the sequence $\{s_n\}$ generated by the sequence of coefficients $\{p_n\}$. The series $\sum a_n$ is said to be summable $\left|\overline{N}, p_n\right|_k, k\geq 1,$ if

(1.2) $$\sum_{n=1}^{\infty}\left(\frac{P_n}{p_n}\right)^{k-1}\left|t_n-t_{n-1}\right|^k<\infty .$$

For a lower triangular matrix $A=(a_{nk})$, we define the matrices $\overline{A}=(\overline{a}_{nk})$ and $\hat{A}=(\hat{a}_{nk})$ as follows:

(1.3) $$\overline{a}_{nk}=\sum_{v=k}^{n} a_{nv} \quad \text{and} \quad \hat{a}_{nk}=\overline{a}_{nk}-\overline{a}_{n-1,k},\ \hat{a}_{00}=\overline{a}_{00}=a_{00},\ n=1,2,\ldots.$$

Clearly $\overline{A}$ *and* $\hat{A}$ are lower semi-matrices .Let

(1.4) $$A_n(s)=\sum_{k=0}^{n} a_{nk}\ s_k \ =\sum_{k=0}^{n}\overline{a}_{nk}\ a_k .$$

Then we have, $\Delta A_n(s)=\sum_{n=0}^{n}\hat{a}_{nk}\ a_k$, where $\Delta A_n(s)=A_n(s)-A_{n-1}(s)$.

Clearly $A_n(s)$ defines a sequence to sequence transformation of $s=\{s_n\}$ to $As=\{A_n(s)\}$. The series $\sum a_n$ is said to be summable $\left|A, p_n\right|_k, k\geq 1$ if