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Appendix to the article “On the inversion of moving averages, linear discrete equalizers and “whitening” filters, and series summability”

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Appendix to the Article "On the Inversion of Moving Averages, Linear Discrete Equalizers and "Whitening" Filters, and Series Summability"

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Some remarks to the preceding article [1] are added.

Hill has been shown in [2] that

$$(1) \quad \sum_{k=1}^{\infty} t_{nk}$$

converges for each n and

$$\lim_{n \rightarrow \infty} \sum_{k=1}^{\infty} t_{nk} = 1,$$

$$(2) \quad \lim_{n \rightarrow \infty} \sum_{k=1}^{\infty} t_{nk}^2 = 0$$

are necessary for the transform \mathcal{T} to have the Borel property, but the condition

$$(3) \quad \sum_{k=1}^{\infty} |t_{nk}| = O(1) \quad \text{for } n \rightarrow \infty$$

is not necessary. Furthermore, (1), (2), (3), are not sufficient for \mathcal{T} to have the Borel property.

In this connection, we remark that the condition (74) of [1] is necessary for the validity of (2), as it is seen from the proof of Theorem 2 of [1]. But the matrix

$$(4) \quad T = \begin{pmatrix} 1, 0, \dots \\ \frac{1}{2}, \frac{1}{2}, \frac{1}{2}, -\frac{1}{2}, 0, \dots \\ \vdots \end{pmatrix}$$

(in the n -th row, there is n times $1/n$, $\binom{n}{2}$ times $1/n$ and $\binom{n}{2}$ times $-1/n$) shows that in this case (74) of [1] is no more sufficient for (2).

Various further known transforms are tested as to the Borel property in [3].
The practical meaning of nonregular transforms satisfying (2) for the theory of linear discrete filters is not clear.

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VÝTAH

Dodatek k článku „O inverzi klouzavých průměrů, lineárních diskretních vyrovnávacích a „bělících“ filtrech a sumabilitě řad“

LUDVÍK PROUZA

Dodatek obsahuje některé poznámky k předěšlému článku [1].

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