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Addendum to "The set of almost convergent sequences as intersections of summability fields"

By

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We use the notations of [1]. In [1], we gave an example of a $pu(c)$-regular but not strongly regular matrix with complex entries. But there are also real examples of such matrices. Following Vermes [2, (4.13), p. 631], we define $A = (a_{nk})$ by

$$a_{nk} := \begin{cases} \dfrac{1}{n+1} & \text{for } k \leqq n \\ -1 & \text{for } k = n! \ (n \geqq 3) \\ 1 & \text{for } k = m! \cdot v \text{ where } m \text{ and } v \text{ are defined by} \\ & \qquad n = m(m-1)/2 + v \text{ with } 1 \leqq v \leqq m \ (n \geqq 3) \\ 0 & \text{otherwise.} \end{cases}$$

Vermes showed that A is a so called $PA - T$-matrix which means that A is regular and sums every periodic sequence to its "right" value, i.e. the arithmetic mean of its components. Denoting the set of periodic sequences by p and the set of null sequences by c_0 we have the direct sum $pu(c) = p \oplus c_0$. Hence, A is $pu(c)$-regular. But A is not strongly regular since condition (1) of [1] is not satisfied.

References

[1] K.-E. SPRENG, The set of almost convergent sequences as intersections of summability fields. Arch. Math. **55**, 366–373 (1990).

[2] P. VERMES, Infinite matrices summing every periodic sequence. Indag. Math. **17**, 627–633 (1955).

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