

periodic under f , then x is also almost periodic under f^n for every integer n .

The proof proceeds easily from Lemma 1, Remark 2, and Theorems 5 and 6.

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SOME PROPERTIES OF SUMMABILITY. II¹

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1. **Summability of bounded sequences.** It follows from a well known result of H. Steinhaus² that no regular matrix method of summability can be effective for (that is, assign a finite limit to) every element in the space (m) of bounded sequences. The object of this note is to consider some questions suggested by this fact. The first of these may be formulated as follows. If A is a given regular matrix method let J_A denote the set of all A -summable bounded sequences. We then ask what are necessary and sufficient conditions on a subset E of (m) in order that there exist a regular A such that $E \subset J_A$? In Theorem 1 below it is shown that the separability of E is a sufficient condition. It seems unlikely that this condition is necessary although we have been unable to decide the question. It is clearly equivalent to the question of whether every J_A is separable.

THEOREM 1. *Let E be an arbitrary separable subset of (m) . Then every regular matrix $A = (a_{mk})$ contains a (necessarily regular) row-submatrix $B = (a_{m_ik})$ such that $E \subset J_B$.*

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¹ This note is in the nature of an appendix to the paper cited in footnote 4.

² H. Steinhaus, *Some remarks on the generalizations of the notion of limit* (in Polish), Prace Matematyczno-Fizyczne vol. 22 (1921) pp. 121-134. See also I. Schur, *Über lineare Transformationen in der Theorie der unendlichen Reihen*, J. Reine Angew. Math. vol. 151 (1921) pp. 79-111.