Chew, Tuan Seng

Characterization of orthogonally additive operators on sequence spaces. (English)

Zbl 0635.46008
Southeast Asian Bull. Math. 11, No. 1-2, 39-44 (1987).

Let X be a real sequence space which is AK as well as FK and with the property that for all $t \in N$, $(x_k) \in X : \|(x_1, x_2, ..., x_t, 0, 0, ...)\| \leq \|(x_k)\|$, where $\|.\|$ denotes the paranorm on X. Let, moreover Y be a paranormed space. A mapping $F : X \to Y$ is said to be orthogonally additive if $F(x + y) = F(x) + F(y)$ whenever $x_k y_k = 0$ for all $k \in N$, $x = (x_k)$, $y = (y_k)$.

The author characterizes the continuous orthogonally additive maps from X to Y as follows.

Theorem: $F : X \to Y$ is orthogonally additive iff :

F(x)= $\sum_k g(k, x_k)$ for $X = (x_d) \in X$ with $g(k, x_k) : N \times R \to Y$ such that:

i) $g(k, 0) = 0$ for all $k \in N$

ii) g(k,.) is continuous on R, for all k

iii) $P_g : X \to cs(Y)$, where $P_g(x) = (g(k, x_k))_k$

and $cs(Y) = \{(y_n); y_n \in Y$, for all n, and $\sum_n y_n \in Y\}$.

Reviewer: N.de Grande-de Kimpe

MSC:

46A45 Sequence spaces (including Köthe sequence spaces)
47B37 Linear operators on special spaces (weighted shifts, operators on sequence spaces, etc.)

Keywords:
paranormed space; continuous orthogonally additive maps