© 2008 European Mathematical Society, FIZ Karlsruhe & Springer-Verlag

---

Zbl 1136.46019

Stachó, L.L.

A Banach-Stone type theorem for lattice norms in C_0-spaces. (English)

Acta Sci. Math. 73, No. 1-2, 193-208 (2007).
http://www.math.u-szeged.hu/acta/

Let Ω be a locally compact topological Hausdorff space and $C_0(\Omega)$ the complex Banach space of all continuous functions vanishing at infinity. Let also $\|\cdot\|$ be a complex Banach lattice norm (with respect to the pointwise ordering of the functions) on $C_0(\Omega)$. The author shows that there exists a finite partition Π of the space Ω into pairwise disjoint finite subsets such that the restriction of any $\|\cdot\|$-Hermitian operator $A: C_0(\Omega) \to C_0(\Omega)$ has the form $Af|_S = a^A(S)f|_S$, $f \in C_0(\Omega)$, $S \in \Pi$, where $a(S): C(S) \to C(S)$ is a (unique) family of linear maps. Moreover, for any $S \in \Pi$ there exists a (unique) inner product $\langle\cdot|\cdot\rangle_S$ on the finite dimensional function space $C(S)$ such that $\{f|_S : \|f\| \leq 1\} = \{\varphi \in C(S) : \langle\varphi|\varphi\rangle_S \leq 1\}$. Also, the author obtains matrix descriptions of surjective isometries $U: C_0(\widetilde{\Omega}) \to C_0(\Omega)$ and, by this last result, one obtains that, unlike in the classical case of spectral norms, the linear isometric equivalence of the spaces $C_0(\Omega)$ and $C_0(\widetilde{\Omega})$ does not imply the existence of a positive surjection linear isometry in general.

Costica Mustăţa (Cluj-Napoca)

Keywords : complex Banach lattice norms; Banach-Stone type theorem

Classification :

∗46E15 Banach spaces of functions defined by smoothness properties
46B42 Banach lattices
28C05 Integration theory via linear functionals