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Orthomorphisms on Riesz spaces of Riesz space-valued functions. (English) Zbl 0774.46010

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Summary: Let E be an Archimedean Riesz space, X a nonempty set, and $\mathcal{F}(X,E)$ the Riesz space of all functions $X \to E$. Suppose that L is a Riesz subspace of $\mathcal{F}(X,E)$ satisfying $\{f(x);\ f \in L\} = E$ for all $x \in X$. It is shown that the f-algebra $\mathrm{Orth}(L)$ can be embedded via a function Φ into the f-algebra $\mathcal{F}(X, \mathrm{Orth}(E))$, and that Φ embeds the center $Z(L)$ with its uniform norm isometrically into $\mathcal{F}_b(X, Z(E))$ equipped with the supremum norm. If E is a Banach lattice, X a locally compact Hausdorff topological space, and L a Riesz subspace of $\mathcal{C}(X,E)$ satisfying some additional conditions, then Φ maps $\mathrm{Orth}(L)$ (resp. $Z(L)$) onto the f-algebra $\mathcal{C}^s(X, Z(E))$ (resp. $\mathcal{C}^s_b(X, Z(E))$) of all strongly continuous (and bounded) $Z(E)$- valued functions on X.

MSC:

46A40 Ordered topological linear spaces, vector lattices
46B42 Banach lattices

Keywords:

Archimedean Riesz space; f-algebra; Banach lattice