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WEAK HOLOMORPHY AND OTHER WEAK PROPERTIES

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Dedicated to the memory of Professor Ioana Cioranescu

ABSTRACT.[1] Let $\mathcal{A}(X)$ be a closed subspace of the space of all scalar functions on a Hausdorff space X which are bounded on all compact sets, endowed with the compact-open topology. Our main result – with a simple, short proof – is that, for a mapping f from X into a locally convex space E which has the property that the image $f(K)$ of each compact set $K \subset X$ is contained in an absolutely convex weakly compact set, $e' \circ f \in \mathcal{A}(X)$ for each e' in a separating set $S \subset E'$ implies $e' \circ f \in \mathcal{A}(X)$ for each $e' \in E'$. This is related to results of Grosse-Erdmann [7], [8] and Arendt, Nikolski [2] for vector valued holomorphic functions.