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Locally solid topologies on spaces of vector-valued continuous functions

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Abstract: Let X be a completely regular Hausdorff space and E a real normed space. We examine the general properties of locally solid topologies on the space $C_b(X, E)$ of all E -valued continuous and bounded functions from X into E . The mutual relationship between locally solid topologies on $C_b(X, E)$ and $C_b(X)$ ($= C_b(X, \mathbb{R})$) is considered. In particular, the mutual relationship between strict topologies on $C_b(X)$ and $C_b(X, E)$ is established. It is shown that the strict topology $\beta_\sigma(X, E)$ (respectively $\beta_\tau(X, E)$) is the finest σ -Dini topology (respectively Dini topology) on $C_b(X, E)$. A characterization of σ -Dini and Dini topologies on $C_b(X, E)$ in terms of their topological duals is given.

Keywords: vector-valued continuous functions, strict topologies, locally solid topologies, Dini topologies

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