A.V. Arhangel'skii, O.I. Pavlov A note on condensations of $C_p(X)$ onto compacta

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Abstract: A condensation is a one-to-one continuous mapping onto. It is shown that the space $C_p(X)$ of real-valued continuous functions on X in the topology of pointwise convergence very often cannot be condensed onto a compact Hausdorff space. In particular, this is so for any non-metrizable Eberlein compactum X (Theorem 19). However, there exists a non-metrizable compactum X such that $C_p(X)$ condenses onto a metrizable compactum (Theorem 10). Several curious open problems are formulated.

Keywords: condensation, compactum, network, Lindelöf space, topology of pointwise convergence, σ -compact space, Eberlein compactum, Corson compactum, Borel set, monolithic space, tightness

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