

On uniformly continuous maps between function spaces

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I will present some recent results concerning uniformly continuous maps between spaces $C_p(X)$ of continuous real-valued function on metrizable spaces X , endowed with the pointwise topology.

We prove that if a space X is compact, metrizable and strongly countably dimensional, then there exists a uniformly continuous surjection from $C_p([0, 1])$ onto $C_p(X)$. We provide a partial result concerning the reverse implication. We also show that, for every infinite Polish zero-dimensional space X , the spaces $C_p(X)$ and $C_p(X) \times C_p(X)$ are uniformly homeomorphic.

This is a joint research with Rafał Górak and Mikołaj Krupski.