Ultrafilter-completness on zero-sets of uniformly continuous functions.

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Let *ZUnif* be a category whose objects are uniform spaces, and morphisms are *coz*-mappings [1], [2]. Let $Comp(\mathbb{R}\text{-}Comp)$ be the class of compact (realcompact) spaces. Then

$$Comp \equiv \mathfrak{L}([0,1])(\mathbb{R}\text{-}Comp \equiv \mathfrak{L}(u_{\mathbb{R}}\mathbb{R})),$$

where $\mathfrak{L}([0,1])(\mathfrak{L}(u_{\mathbb{R}}\mathbb{R}))$ is the epi-reflective hull of $[0,1](u_{\mathbb{R}}\mathbb{R})$ in the category *ZUnif* [3], [4]. The functors of epi-reflections are the β-like compactification $\beta_u : uX \to \beta_u X$ and realcompactification $v_u : uX \to v_u X$ [5]. Furthermore z_u*-complete* ($\mathbb{R}$-z_u-complete) uniform spaces have been determined, which are in precisely an elements of $\mathfrak{L}([0,1])$ ($\mathfrak{L}(u_{\mathbb{R}}\mathbb{R})$).

[1] Z. Frolík, *Four functors into paved spaces*, in Seminar uniform spaces 1973-4. Matematický ústav ČSAV (1973), 27–72
[2] M. Charalambous, *A new covering dimension function for uniform spaces*, J. London Math. Soc. **11** (1975), no. 2, 137–143
[3] S. Franklin, *On epi-reflective hulls*, Gen.Topol. and its Appl. **1** (1971), 29–31
[4] H. Herrlich, *Categorical topology*, Gen.Topol. and its Appl. **1** (1971), 1–15
[5] A. Chekeev, *Uniformities for Wallman compactifications and realcompactifications*, Topology Appl. **201** (2016), 145–156

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