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E-SEQUENTIAL ENVELOPES

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It was proved by the first author (Czechoslovak Math. J. 26(1976), 604-612) that an E-sequentially regular convergence space (L, \mathcal{A}) , where E is a subset of the real line R, can have at most two topologically different E-sequential envelopes: $\mathcal{C}_E L$ (viz. $\mathcal{C}_{\{0,1\}} L$ and $\mathcal{C}_R L$) and a problem was put forward whether there is a $\{0,1\}$ -sequentially regular convergence space L such that $\mathcal{C}_{\{0,1\}} L \neq \mathcal{C}_R L$ (cf. Problem 2.5).

1. If L is $\{0,1\}$ -sequentially regular convergence space, then $\mathcal{C}_{\{0,1\}} L$ is the sequential closure of L in the Banaschewski 0-dimensional compactification $\beta_0 L$ of L.

2. There is a maximal almost disjoint family \mathcal{F} on ω such that, for the usual space $L = \omega \cup \mathcal{F}$, $\beta_0 L$ is a sequential space (of order 2), $\text{card}(\beta_0 L - L) = 1$, $\text{card}(\beta L - L) \geq 2^\omega$. Thus $\mathcal{C}_{\{0,1\}} L \neq \mathcal{C}_R L$ (since L is not countably compact) and $\text{Ind } L > 0$.

3. We can characterize (in terms of fundamental multisequences) the $\{0,1\}$ -sequentially regular space L for which $\mathcal{C}_{\{0,1\}} L = \mathcal{C}_R L$. Since $\mathcal{C}_R L = \mathcal{C}_{[0,1]} L$, the characterization is similar to that of spaces X with $\text{Ind } X = 0$ (i.e., for which $\beta X = \beta_0 X$).