Metrizability in generalized inverse limits

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Abstract

For the metric arc $I = [0,1]$ and continuum-valued bonding relation $f \subseteq_{\mathrm{cl}} I^2$, the inverse limit $\varprojlim\{I, f, \omega\}$ is the subspace of the countable power I^ω containing sequences $\vec{x}$ satisfying $\vec{x}(n) \in f(\vec{x}(n+1))$. A recent trend in continuum theory is to generalize this notion to $\varprojlim\{I, f, L\}$, where L is an arbitrary linear order. When $L = \omega$, the inverse limit is a subspace of the metrizable space I^ω; however, we will show that when L is uncountable, the inverse limit cannot be metrizable unless f is trivial. Furthermore, when L is an uncountable well order, it will be shown that the inverse limit is not even Corson compact.