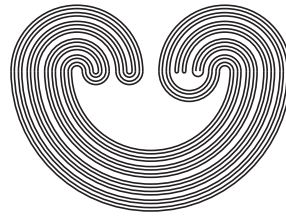


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HEREDITARY PARACOMPACTNESS OF LEXICOGRAPHIC PRODUCTS

by

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HEREDITARY PARACOMPACTNESS OF LEXICOGRAPHIC PRODUCTS

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ABSTRACT. Paracompactness and hereditary paracompactness of lexicographic products of LOTS's are discussed in [2]. For instance, it is known in [2]:

- a lexicographic product $X = \prod_{\alpha < \gamma} X_\alpha$ of LOTS's is paracompact whenever all X_α 's are paracompact [2, Theorem 4.2.2],
- a lexicographic product $X = \prod_{\alpha < \gamma} X_\alpha$ of LOTS's is hereditarily paracompact whenever $\gamma < \omega_1$ and all X_α 's are hereditarily paracompact [2, Theorem 4.2.3],
- the lexicographic product $[0, 1]_{\mathbb{R}}^{\omega_1}$ is not hereditarily paracompact, where $[0, 1]_{\mathbb{R}}$ denotes the unit interval in the real line \mathbb{R} [2, page 73].

Recently the author defined the notion of lexicographic products of GO-spaces and extended the first result above in [2] for lexicographic products of GO-spaces [4]. In this paper, we characterize the hereditary paracompactness of lexicographic products of GO-spaces and get some applications. For example, we see:

- the lexicographic products \mathbb{S}^γ , \mathbb{M}^γ , \mathbb{R}^γ and $(0, 1)_{\mathbb{R}}^\gamma$ are hereditarily paracompact for every ordinal γ , where \mathbb{S} and \mathbb{M} denote the Sorgenfrey line and Michael line respectively,
- the lexicographic product $[0, 1]_{\mathbb{R}}^\omega$ is hereditarily paracompact, but the lexicographic product $[0, 1]_{\mathbb{R}}^{\omega_1}$ is not hereditarily paracompact,
- the lexicographic product $\omega_1 \times (0, 1]_{\mathbb{R}}$ is hereditarily paracompact but the lexicographic product $\omega_1 \times [0, 1]_{\mathbb{R}}$ is not paracompact,
- the lexicographic product $(\omega_1^2 \times (-\omega_1)^3)^{\omega_1}$ is hereditarily paracompact, but the lexicographic products ω_1^ω and $\omega_1^{\omega_1}$ are not paracompact, where for a GO-space $X = \langle X, <_X, \tau_X \rangle$, $-X$ denotes the GO-space $\langle X, >_X, \tau_X \rangle$.

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