

Victoria Lubitch

Left separated spaces

Abstract. A topological space X is *left separated* if there is a well-ordering of X so that every initial segment of it is closed. $\widehat{L}(X) = \min\{\mu : \forall \mathcal{U}, \text{cov}(X, \mathcal{U}) < \mu\}$. If X is a finite union of left-separated spaces and $\widehat{L}(X) > \kappa$, where κ is a regular cardinal, then there is a closed discrete set in X of cardinality κ . From it follows that if X is an ω_1 -Lindelöf space which is a finite union of left-separated spaces then X is Lindelöf. It appears that it is not true for countable union. Assuming $\mathfrak{b}_{\aleph_1} = 2^{\aleph_1}$ we construct ω_1 -Lindelöf space which is not Lindelöf and it is a countable union of discrete subspaces.