

Ronnie Levy, Mikhail Matveev
Weak extent in normal spaces

Comment.Math.Univ.Carolinae 46,3 (2005) 497-501.

Abstract: If X is a space, then the weak extent $we(X)$ of X is the cardinal $\min\{\alpha : \text{If } \mathcal{U} \text{ is an open cover of } X, \text{ then there exists } A \subseteq X \text{ such that } |A| = \alpha \text{ and } St(A, \mathcal{U}) = X\}$. In this note, we show that if X is a normal space such that $|X| = \mathfrak{c}$ and $we(X) = \omega$, then X does not have a closed discrete subset of cardinality \mathfrak{c} . We show that this result cannot be strengthened in ZFC to get that the extent of X is smaller than \mathfrak{c} , even if the condition that $we(X) = \omega$ is replaced by the stronger condition that X is separable.

Keywords: extent, weak extent, separable, star-Lindelöf, normal

AMS Subject Classification: Primary 54A25, 54D40