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Exponential domination in function spaces

Abstract: Given a Tychonoff space X and an infinite cardinal κ, we prove that exponential κ-domination in X is equivalent to exponential κ-cofinality of $C_p(X)$. On the other hand, exponential κ-cofinality of X is equivalent to exponential κ-domination in $C_p(X)$. We show that every exponentially κ-cofinal space X has a κ^+-small diagonal; besides, if X is κ-stable, then $nw(X) \leq \kappa$. In particular, any compact exponentially κ-cofinal space has weight not exceeding κ. We also establish that any exponentially κ-cofinal space X with $l(X) \leq \kappa$ and $t(X) \leq \kappa$ has i-weight not exceeding κ while for any cardinal κ, there exists an exponentially ø-cofinal space X such that $l(X) \geq \kappa$.

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