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CARDINALITY BOUNDS OF H-SETS IN URYSOHN SPACES

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A Urysohn space X is constructed which has an H-set A with $|A| > 2^{p_c(X)}$, where $p_c(X)$ is the closed-pseudocharacter of the space X . The space provides a counterexample to a question of Fedeli. In addition, there is no theta-continuous map from a compact Hausdorff space to the space X with the H-set A as the image, giving a Urysohn counterexample to a conjecture of Vermeer. Finally, it is shown that the cardinality of an H-set in a Urysohn space X is bounded by $2^{c(X_s)}$, where $c(X)$ is the character of X and X_s is the semiregularization of X . This refines a result of Bella stating that the cardinality of such an H-set is bounded by $2^{c(X)}$.

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