A CLASS OF REAL COMPACT SPACES - SOME ASSOCIATED PROBLEMS

SUDIP KUMAR ACHARYYA

Department of Pure Mathematics, University of Calcutta, Kolkata, India

Abstract: Let $\mathcal{P}$ be an ideal of closed subsets of a completely regular Hausdorff topological space. Suppose $C_{\mathcal{P}}(X)$ stands for the set of those functions in $C(X)$ whose supports lie in $\mathcal{P}$. We call X to be $\mathcal{P}$-*compact* if for each point $p \in \beta x - x$, there exists an $f \in C_{\mathcal{P}}(X)$ such that $f^*(p) = \infty$, where $f^* : \beta x \to \mathbb{R} \cup \{\infty\}$ is the Stone extension of f and βX denotes the Stone-Čech compactification of X. Each $\mathcal{P}$-compact space is real compact, and we have addressed the following problem: if X is given to be real compact, does there exist any minimal family $\mathcal{P}$ of closed sets in X (minimal in some sense) for which X is $\mathcal{P}$-compact. It turns out that the answer to this query is negative if the word minimal is understood in the inclusion sense. It is not yet settled whether any suitable interpretation of the phrase "minimal" gives a positive answer to this question.