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Sum and intersection of summand ideals in $C(X)$

Summand sum property (SSP) and summand intersection property (SIP) of Modules are studied by J. L. Garcia and G. V. Wilson respectively. In this paper we give some topological characterizations of these properties in $C(X)$. It is shown that the ring $C(X)$ has SIP if and only if every intersection of closed-open subsets of X has a closed interior. This characterization the shows that for a large class of topological spaces, such as locally connecte spaces and extremally disconnected spaces, the ring $C(X)$ has SIP. It is also shown that $C(X)$ has SSP if and only if the space X has only finitely many components. Finally, using summand ideals of $C(X)$, we give several algebraic characterizations of some disconnectd spaces.

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