# Some Results Related with Semi Compactness in Bitopological Spaces

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## Abstract

The triple $(X, \tau_1, \tau_2)$ is known as a bitopological space, where $\tau_1$ and $\tau_2$ are two topologies which are defined in a nonempty set $X$. The concept 'bitopological space' was established from asymmetric metric spaces. The objective of this paper is to establish some results which are related with $\delta -$semi compactness in bitopological spaces. In particular, we can identify the relationship between the bitopological spaces and their product space in semi compactness. For a pairwise $\delta -$continuous surjective and pairwise $\delta -$ open mapping $f : (X, \tau_1, \tau_2) \longrightarrow (Y, \sigma_1, \sigma_2)$, the image of a $\tau_1\tau_2 - \delta$ semi compact space under $f$ is $\sigma_1\sigma_2 - \delta$ semi compact space. Furthermore, the product space $(X \times Y, \tau_1 \times \sigma_1, \tau_2 \times \sigma_2)$ is $\tau_1 \times \sigma_1\tau_2 \times \sigma_2 - \delta$ semi compact space, if both $(X, \tau_1, \tau_2)$ and $(Y, \sigma_1, \sigma_2)$ are $\tau_1\tau_2 - \delta$ semi compact and $\sigma_1\sigma_2 - \delta$ semi compact respectively. Moreover, if a bitopological space $(X, \tau_1, \tau_2)$ is $\tau_1\tau_2 - \delta$ semi compact and topological spaces $(X, \tau_1)$ and $(X, \tau_2)$ are $\delta -$Hausdorff space then the semi regularization of $\tau_1$ and $\tau_2$ are equal. That is, $\tau_{1s} = \tau_{2s}$. Through these results, we are able to get the clear understanding about the concept 'semi compactness' and how to connect this concept with topological spaces and bitopological space. In addition, we can identify the way to connect the continuous maps and product spaces with semi compactness.

*Keywords - Bitopological spaces, $\delta -$semi compact, pairwise $\delta -$continuous, Product space*