Poincare Journal of Analysis & Applications
Vol. 10, No. 2 (2023), 349-358

DOI: 10.46753/pjaa.2023.v010i02.011

COMPACTIFICATION ON $*$-TOPOLOGY

KULCHHUM KHATUN, AHMAD AL-OMARI, AND SHYAMAPADA MODAK†

Date of Receiving	:	11. 08. 2022
Date of Revision	:	16. 06. 2023
Date of Acceptance	:	07. 12. 2023

Abstract. In the study of compactifications, the Hausdorff space plays an important role. This paper has been shown that what is the change of compactification due to the ideal on topological spaces. To do this Hausdorff space has been redefined in terms of ideal. Compactness and homeomorphism are also significant for studying the ideal Hausdorff space. Product of ideal Hausdorff spaces is not as usual product of Hausdorff spaces and it has also been discussed in this paper.

1. Literature review

The study of Hausdorff space was introduced in 1914 and it was introduced from several parts of views. This space has remarkable role for the study of metrizability, compactness, paracompactness, manifold and topological dimension theory etc. The study of Hausdorff space will be interesting when the ideal ([5], [11]) play a role on it. For this study we consider following: An ideal on a set K is a sub collection of $\wp(K)$ (power set of K) satisfy hereditary property and finite additivity property. λ_f, the collection of all finite subsets of K; λ_{co}, the collection of all countable subsets of K are the examples of ideals on K. If we go through the topological space (K, V), where V is a topology on K, then we get the following more ideals:
$\lambda_{ci\phi}$, the collection of all nowhere dense subsets of K; λ_{mg}, the collection of all relatively compact subsets of K are ideals on K. The generalization of limit point of a subset of K is defined as a local function on the topological space (K, V, λ), although this space has already been used in terms of ideal topological space [10]. The set-valued set function $g : \wp(K) \to \wp(K)$ defined as $A^g(K, \lambda)$(or simply A^g)=$\{k \in K : \ v \cap A \notin \lambda\}$, where $v \in V(x)$, the collection of all open sets containing x. This is termed as local function [4, 5]. Its associated function is, $\psi : \wp(K) \to \wp(K)$ ([9]) and defined as $\psi(A) = K \setminus (K \setminus A)^g$, that is $g \sim^K \psi$ ([7]).

2010 *Mathematics Subject Classification.* 54A05, 54D10, 54D15, 54D35.
Key words and phrases. Ideal, Local function, Ideal Hausdorff space, Compactification.
Communicated by. Baravan A. Asaad
† *Corresponding author*