

**SEMI λ^* -CLOSED SETS AND NEW SEPARATION AXIOMS IN
ALEXANDROFF SPACES**

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Abstract: Here we have studied the idea of semi λ^* -closed sets and investigate some of their properties in spaces considered by A. D. Alexandroff [1]. We have introduced some new separation axioms namely semi- $T_{\frac{\omega}{4}}$, semi- $T_{\frac{3\omega}{8}}$, semi- $T_{\frac{5\omega}{8}}$ and their inter-relation with semi- T_0 and semi- T_1 . We have shown that under certain conditions these axioms are equivalent.

Keywords and Phrases: Semi g^* -closed sets, $sA_r^\wedge$ -sets, semi- $T_{\frac{5\omega}{8}}$ axiom, semi-weak R_0 spaces.

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1. Introduction

Topological spaces have been generalised in several ways. By weakening the union requirements A. D. Alexandroff (1940) [1] generalised the idea of topological space to a σ -space (or simply space) by taking only countable unions of open sets to be open. Later many works on generalisation of sets were done in a more general structure of a bispaces [3] and [4]. Also several topological properties were studied in a bispaces in [2] and [5].

The idea of generalised closed sets in a topological space was given by Levine [17]. In 1987, Bhattacharyya and Lahiri [7] introduced the class of semi-generalised closed sets in a topological space. Many works on semi-generalised closed sets (sg -closed sets) have been done [15], [18], [21], etc. where more references can be found. By taking an equivalent form of sg -closed sets, P. Das and Rashid (2004) [13] gave the idea of a generalisation of semi-closed sets in the σ -spaces called semi g^* -closed (sg^* -closed in short) sets and studied its various properties. Recently M. S. Sarsak