

## SOME PROPERTIES OF BINARY $S_\alpha$ OPEN AND CLOSED SETS IN BINARY TOPOLOGICAL SPACE

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**Abstract:** The primary aim of this paper is to discuss the interior and closure operators of binary  $S_\alpha$  set in binary topological spaces. That is binary  $S_\alpha$ -closure and binary  $S_\alpha$ -interior are defined. Also, their basic properties are discussed with suitable examples. Furthermore, the basic relation with the other existing sets have been discussed. binary  $S_\alpha$ -closure and binary  $S_\alpha$ -interior are denoted as  ${}_bS_\alpha cl$  and  ${}_bS_\alpha int$  respectively.

**Keywords and Phrases:** Binary  $S_\alpha$  set, Binary  $S_\alpha$ -closure, Binary  $S_\alpha$ -interior, Binary topological space, Binary interior, Binary closure.

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### 1. Introduction

A topological space is a space provided with a structure, called a topology, which involves study of properties of space that are fixed under continuous deformation. Topology plays a tremendous role in the field of mathematics research. In particular, binary topology is an recently developed part of topology. The concept of Binary topology was first introduced by S. Nithyanantha Jothi and P. Thangavelu [6] in 2011 where a single structure which carries the subsets of  $X$  as well as the subsets of  $Y$  in a ordered pair  $(A, B)$  of subsets of  $X$  and  $Y$ . This type of a structure is called Binary topology. S. N. Jothi and P. Thangavelu [7] introduced binary semiopen open sets in this Binary structure and discussed some of their