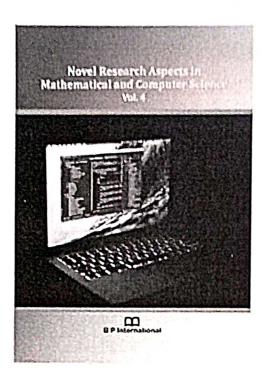
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J-Closed Functions via J-Closed Sets in Topological Spaces

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Abstract View Article

In this article, J-closed functions using the concept of J-closed sets and J-open functions using the notion of J-open sets are initiated. The interrelationships of these newly introduced functions with various existing functions are examined and its properties are analysed.The composition of two J-closed function need not be a J-closed function which is proved by Counter Example. The J-closed functions are used to define homeomorphisms using J-closed sets in topological spaces.Homeomorphisms are isomorphisms in the category topological spaces-that is, they are the mappings that preserve all the topological properties of a given space.

The study of J-closed functions has been done by the following methods:

- Analytical method of comparing Jclosed functions with other existing closed functions.
- Obtaining counter examples wherever necessary to substantiate the result.
- Interpreting the results as diagrams.
- Analysis of preservation of topological properties by J-closed functions.

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P. L. Meenakshi a*# and R. Sudha b#

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Abstract

In this article, J-closed functions using the concept of J-closed sets and J-open functions using the notion of J-open sets are initiated. The interrelationships of these newly introduced functions with various existing functions are examined and its properties are analysed. The composition of two J-closed function need not be a J-closed function which is proved by Counter Example. The J-closed functions are used to define homeomorphisms using J-closed sets in topological spaces. Homeomorphisms are the isomorphisms in the category of topological spaces-that is, they are the mappings that preserve all the topological properties of a given space. The study of J-closed functions has been done by the following methods:

- Analytical method of comparing J-closed functions with other existing closed functions.
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- · Interpreting the results as diagrams.
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Keywords: J-closed function; J-closed set; J-open set; J-open function and η^* -open sets.

1 Introduction

In 1937, Stone [1] introduced regular open sets and used it to define the semi-regularization of a topological space. In 1968, Velicko [2] proposed δ -open sets which are stronger than open sets. Levine [3] has brought generalized closed sets in 1970. Dumham [4] has established a generalized closure using Levine's generalized closed sets as Cl*.In 2016, Annalakshmi [5] has introduced regular*-open sets (r*-open sets) using Cl*.A class of new sets namely η *-open sets, a union of r*-open sets, which is placed between the classes of δ -open set and open set is introduced. Its basic properties are procured and the concepts of η *-cluster point, η *-adherent point and a η *-derived set are introduced and studied. Moreover, a new class of sets namely J-closed sets is initiated using η *-open sets in topological spaces. This new concept is weaker than closedness and infact it is weaker than g-closedness but stronger than $g\delta$ -closedness which are essential to characterize almost weakly Hausdorff spaces and thus the digital line. The properties and relationships with other g-closed sets are analysed. The class of J-closed sets is placed between that of generalized closed (g-closed) sets and generalized δ -closed sets ($g\delta$ -closed). Changing the position of η *-Closure operator and η *-openness another two concepts are introduced namely J*-closed sets and J**-closed sets and their status are analysed and properties are obtained. Many interesting characterizations are established. Finally in a semi-regular space, J, J* and J**-closed sets coincide which has to be proved by Example.

In this article, J-closed functions and J-open functions are initiated. The interrelationships of these newly introduced functions with various existing functions are examined and its properties are analysed.

2 Preliminaries

Notation 1.1 Through out the dissertation (Y,ζ) , (Z,σ) and (P,μ) indicate topological spaces on which no separation axioms are referenced except as otherwise provided.

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