Review of Literature

REVIEW OF LITERATURE

In 1965 [40] Zadeh introduced the notion of fuzzy sets. In 1967 Goguen [17] introduced the notion of L-fuzzy sets. In 1986, Atanassov [3] introduced the notion of intuitionisitc fuzzy sets. Using these concepts, the notion of topological spaces has been extended to fuzzy situation as fuzzy topological spaces, L-fuzzy topological spaces and intuitionistic fuzzy topological spaces. Moreover, almost all the concepts in general topological spaces have been extended to these topological spaces. Connectedness is one of the important notions in topology. Many authors have extended this concept to fuzzy situation in various ways.

In this chapter we have collected the articles on connectedness from the available literature ; it is not exhaustive.

L-Fuzzy unit interval and fuzzy connectedness
[Zheng, 1988] [42]

In this article some properties of L-fuzzy unit interval are used to define the standard L-fuzzy path connectedness. Some theorems to show the relationship between the different types of fuzzy connectedness such as 0-connectedness, Q-connectedness, 1-connectedness and standard L-fuzzy path connectedness are discussed.

On fuzzy connectedness
[Ali and Srivastava, 1988] [2]

In this note, some of the properties of various fuzzy connectedness concepts are discussed.

Semi-continuous and semi-closed mappings and semi-connectedness in fuzzy setting
[Ghosh, 1990] [16]

In this article different characterizations of semi-continuous and semi-closed mappings between fuzzy topological spaces are studied. The notion of fuzzy semi-open sets is used to define fuzzy T_i-spaces (i = 0, 1, 2) and these spaces are investigated under fuzzy semi-continuity. Finally, fuzzy semi-connectedness is introduced and studied to some extent.

On some fuzzy connectedness concept
[Srivastava and Anuranwaj Singh, 1994] [34]

The authors have examined whether or not the concepts of fuzzy strong connectedness, fuzzy super-connectedness and fuzzy C-connectedness can be viewed as E-connectedness in the category FTS of fuzzy topological spaces, in the sense of preuss.

On connectedness in intuitionistic fuzzy special topological spaces
[Ozcag and Coker, 1998] [27]

In this article the authors have introduced the concepts of C5-connectedness, CS-connectedness, CM-connectedness, strong connectedness, super-connectedness, Ci-connectedness (i = 1, 2, 3, 4), and have obtained several preservation properties and some characterizations concerning connectedness in intuitionistic fuzzy special topological spaces.

A note on connectedness in intuitionistic fuzzy special topological spaces
[Ozcag and Coker, 2000] [28]

The authors have proved some properties of several types of connectedness defined in intuitionistic fuzzy special topological spaces.

Fuzzy connectedness in intuitionistic fuzzy topological spaces [Turanli and Coker, 2000] [36]

The authors have introduced several types of fuzzy connectedness in intuitionistic fuzzy topological spaces defined by Coker [13]. The authors have also investigated some interrelations between these types of fuzzy connectedness together with the preservation properties under fuzzy continuous functions.

Fuzzy connectedness : A unified approach [Mukherjee and Chakraborty, 2001] [26]

In this article the authors have initiated a unified theory in the context of fuzzy connectedness and many of its allied forms, done already in a fuzzy topological space. With the help of a generalized type of operator, it has ultimately been possible to arrive at certain unified results which when interpreted in different particular settings in fuzzy topological spaces, provide results, already known in the respective corresponding situations. It is thus revealed that different types of fuzzy connectedness, studied so far as different entities, can now be brought under a single proof.

Connectedness in fuzzy suprabitopological spaces [Sampath Kumar, 2001] [31]

The concept of supra connectedness, strong supra connectedness and super supra connectedness have been introduced and the interrelations that exist between them are obtained in fuzzy suprabitopological spaces.

Weaker forms of connectedness and stronger forms of disconnectedness in fuzzy bitopological spaces [Chandra Sekar and Balasubramanian, 2002] [10]

In this article some weaker forms of fuzzy connectedness and stronger forms of fuzzy disconnectedness are introduced in fuzzy bitopological spaces.

Some characterizations and properties of these spaces are given. Several examples are discussed.

P-Connectedness in L-topological space
[Bai, 2003] [5]

In this article, P-connectedness of L-fuzzy sets in L-fuzzy topological spaces is introduced and studied. It preserves some fundamental properties of connected sets in general topological spaces. Especially, the famous K.Fan's theorem holds for P-connectivity.

Fuzzy α-connectedness and fuzzy α-disconnectedness in fuzzy topological spaces
[Balasubramanian and Chandra Sekar, 2004] [8]

Various types of connectedness and disconnectedness are introduced using fuzzy α-open sets. Several properties and characterizations of these types are discussed.

Connectedness in intuitionistic fuzzy topological spaces
[Kim and Abbas, 2005] [21]

The authors have introduced the notion of (r, s)-connected sets in intuitionistic fuzzy topological spaces and investigated some properties of them. In particular, they have shown that every (r, s)-component in an intuitionistic fuzzy topological space is a (r, s)-component in the stratification of it.

P2-Connectedness in L-topological spaces
[Li, Fang and Zhao, 2005] [23]

In this article, a certain type of connectedness of L-fuzzy sets in L-fuzzy topological spaces is introduced and studied by means of preclosed sets. It preserves some fundamental properties of connected sets in general topology, especially, the famous K. Fan's theorem holds.

PS-Connectedness of L-subsets
[Bai, 2007] [6]

In this article, a new notion of connectedness is introduced in L-fuzzy topological spaces, which is called as PS-connectedness. It contains some nice properties. Especially, the famous K. Fan's theorem holds for PS-connectedness in L-fuzzy topological spaces.

On some kinds of fuzzy connected space
[Hassan, 2007] [18]

In this article, new results in fuzzy connected spaces are introduced. Among the results obtained one can mention the good extension of local connectedness. Also, it is proved that in a T_1-fuzzy compact space the notions C-zero dimensional, strong C-zero dimensional and totally C_i-disconnected are equivalent.

Connectedness and local connectedness in lowen spaces
[Li, 2007] [22]

A fuzzy connectedness axiom and a matching fuzzy local connectedness are defined in this article for Lowen spaces. It is shown that such Lowen spaces have properties corresponding to those of traditional connected and locally connected topological spaces. It is also proved that an L-fuzzy topological space is fuzzy connected (resp., fuzzy locally connected) if and only if its induced I(L)-topological space is fuzzy connected. Some related categorical results are also obtained and a fuzzy version of topological intersection theorem is given by using this notion of connectedness.

Connectedness based on strongly preclosed L-sets
[Xu and Shi, 2007] [39]

In this article, the concepts of SP1-connectedness and SP2-connectedness of L-fuzzy sets in L-fuzzy topological spaces are introduced by means of strongly preclosed L-fuzzy sets. SP1-connectedness

and SP2-connectedness preserve some fundamental properties of connectedness in general topology. Especially, the famous K.Fan's theorem can be generalized to L-fuzzy set theory.

ω-Connectedness and local ω-connectedness on an Lω-space [Huang, 2009] [19]

In this article, the concepts of the ω-coincidence neighbourhood, local ω-connected set and local ω-connected space on an Lω-space are introduced. The characterizations of the concepts are given, such as topological invariant property and good extension.

Fuzzy connectedness in interval-valued fuzzy topological spaces [Ju and Yuan, 2009] [20]

In this article, several types of fuzzy connectedness in interval-valued fuzzy topological spaces are introduced. This construction is based on the idea of interval-valued fuzzy set developed by Zadeh. The authors have also investigated some interrelations between these types of fuzzy connectedness with some examples.

Connectedness degrees in L-fuzzy topological spaces [Shi, 2009] [32]

In this article, the notion of separatedness degrees of L-fuzzy sets is introduced in L-fuzzy topological spaces by means of L-fuzzy closure operators. Furthermore, the notion of connectedness degrees of L-fuzzy sets is introduced. Many properties of connectedness in general topology are generalized to L-fuzzy topological spaces.

Fuzzy connected sets in L-topological spaces [Bayhan, 2010] [9]

In this article, some weaker forms of L-fuzzy connectedness notions, namely C1, C2, C3, C4 and CS-connectedness in L-topological spaces are

investigated. A comparative study of these concepts is done and interrelations between them are obtained.

β-Connectedness in L-topological spaces
[Chen, 2011] [12]

In this article, a new kind of connectivity called β-connectedness in L-topological spaces is introduced by means of β-closed L-sets. Some fundamental properties of β-connectedness are obtained. Especially, the famous K. Fan's theorem is extended to L-topological spaces for β-connectedness.

In this dissertation the contributions of Ghosh [16], Bai [5], Li, Fang and Zhao [23], Kim and Abbas [21] are discussed in detail.