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α^e-Closed Set, α^e-Continuity and α-e-Almost Compactness For Crisp Subsets of a Fuzzy Topological Space

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Abstract

This paper is a continuation of [3]. In this paper we introduce a new type of crisp set viz., α^e-closed set which inherits α-e-almost compactness [3] of a fuzzy topological space. In the last section we introduce α^e-continuous function between two fuzzy topological spaces under which α-e-almost compactness for crisp subsets remains invariant.

AMS Subject Classifications: 54A40, 54C99, 54D20.

Keywords: α-e-almost compact space, α-e-almost compact set, α-e-Urysohn space, α^e-closed set, α-e-continuity, fuzzy e-open function.

1. Introduction

After introducing fuzzy topology given by Chang [4], different types of closed sets are introduced in fuzzy set theory. But after introducing α-shading (where $0 < \alpha < 1$) by Gantner et al. [6] in 1978, new types of closed sets which are crisp subsets of a space X where the underlying structure is fuzzy topology are introduced and studied. Here we introduce a new type of crisp subset with the help of α-shading, viz., α^e-closed set. Using the idea of α-shading in [3] α-e-almost compactness for crisp set is introduced and studied.

2. Preliminaries

Throughout the paper by (X, τ) or simply by X, we mean a fuzzy topological space (fts, for short) in the sense of Chang [4]. A crisp set A in an fts X means an ordinary subset of the set X where the underlying structure of the set X being a fuzzy topology τ. A fuzzy set [8] A is a mapping from a nonempty set X into the closed interval $I = [0, 1]$ of the real line, i.e., $A \in I^X$. For a fuzzy set A, the fuzzy closure [4] and fuzzy interior [4] of A in X are denoted by clA