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α-b-regularity in a fuzzy topological space

Anjana Bhattacharyya

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Abstract. This paper deals with a new type of fuzzy separation axiom, viz., fuzzy α-b-regular space by introducing fuzzy α-b-open set as a basic tool. This newly defined class of sets is strictly larger than that of fuzzy open set as well as fuzzy preopen set, fuzzy semiopen set, fuzzy α-open set and fuzzy β-open set. Also, we introduce new type of fuzzy compact space and a strong form of fuzzy T_2-space. However, three different types of functions are introduced and studied. Also the mutual relationships of these functions are established. Lastly some applications of these functions on the spaces introduced here are established.

2020 AMS Classification: 54A40, 03E72

Keywords: Fuzzy α-b-open set, Fuzzy regular open set, Fuzzy α-b-r-continuous function, Fuzzy α-b-continuity, Fuzzy almost α-b-continuity, Fuzzy extremally disconnected space.

Corresponding Author: Anjana Bhattacharyya (anjanabhattacharyya@hotmail.com)

1. Introduction

Fuzzy α-open set was introduced in [1]. Using this concept as a basic tool, here we introduce fuzzy α-b-open set. After introducing fuzzy continuous function in [2], different types of fuzzy continuous-like functions were introduced and studied. Using the concept of fuzzy regular closed set [3], here we introduce fuzzy α-b-r-continuous function, fuzzy α-b-continuity, and fuzzy almost α-b-continuity. Fuzzy regular space was introduced in [4]. Here we introduce fuzzy α-b-regular space, the class of which is strictly larger than that of fuzzy regular space. It is shown that in this space fuzzy open set and fuzzy α-b-open set coincide. Again fuzzy compact space was introduced by Chang [2]. Here we introduce fuzzy α-b-compactness which is weaker than fuzzy compactness. Also fuzzy α-b-T_2-space was introduced, the class of which is strictly larger than that of fuzzy T_2-space [4].
Recently, new types of fuzzy sets, viz., fuzzy soft set and fuzzy octahedron set are

7. Conclusions

In this paper we have introduced and characterized only fuzzy α-b-regularity, fuzzy α-b-compactness and fuzzy α-b-T_2 property. A thorough discussion on these three spaces are done in a separate article which has already been communicated.

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Anjana Bhattacharyya (anjanabhattacharyya@hotmail.com)
Department of Mathematics, Victoria Institution (College), 78 B, A.P.C. Road, Kolkata - 700009, India