NEW TYPES OF FUZZY CONTINUITY VIA β-SEMIOPEN SET

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Abstract. This paper deals with a new type of fuzzy open-like sets, viz., fuzzy β-semiopen sets, the class of which is strictly larger than that of fuzzy semiopen sets [1], but strictly smaller than the classes of fuzzy β-open sets [8], respectively of fuzzy e^*-open sets [4]. It is shown that the collection fuzzy β-semiopen sets does not form a fuzzy topology. In Section 4, a new type of continuous-like function, viz., fuzzy (β-semi, r)-continuous function is introduced and studied. In Section 5, some applications of this new type of function are established.

1. INTRODUCTION

After introduction of the notion of fuzzy open set by Chang [7], several classes of fuzzy open-like sets have been studied, in connection with generalized form of fuzzy continuity [1, 2, 4, 5, 6]. In this context we have to mention [1, 2, 4, 5, 6, 8]. In [4], fuzzy δ-semiopen, fuzzy e-open, fuzzy e^*-open, fuzzy a-open sets are introduced and studied.

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[2] Bhattacharyya, Anjana and Mukherjee, M.N., **On fuzzy δ-almost continuous and δ^*-almost continuous functions**, J. Tripura Math. Soc., 2 (2000), 45-57.

[3] Bhattacharyya, Anjana, **Concerning almost quasi continuous fuzzy multifunctions**, Universitatea Din Bacău Studii Și Cercetări, Științifice Seria : Matematică, 11 (2001), 35-48.

[4] Bhattacharyya, Anjana, **Several concepts of continuity in fuzzy setting**, Annals of Fuzzy Mathematics and Informatics, 13, No. 2 (2017), 213-229.

[5] Bhattacharyya, Anjana, **Fuzzy γ-continuous multifunction**, International Journal of Advance Research in Science and Engineering, 4 (2) (2015), 195-209.

[6] Bin Shahna, A.S., **On fuzzy strong semicontinuity and fuzzy precontinuity**, Fuzzy Sets and Systems, 44 (1991), 303-308.

[7] Chang, C.L., **Fuzzy topological spaces**, J. Math. Anal. Appl., 24 (1968), 182-190.

[8] Fath Alla, M.A., **On fuzzy topological spaces**, Ph.D. Thesis, Assiut univ., Sohag, Egypt, (1984).

[9] Ganguly, S. and Saha, S., **A note on δ-continuity and δ-connected sets in fuzzy set theory**, Simon Stevin, 62 (1988), 127-141.

[10] Ganguly, S. and Saha, S., **A note on compactness in fuzzy setting**, Fuzzy Sets and Systems, 34 (1990), 117-124.

[11] Mukherjee, M.N. and Ghosh, B., **On nearly compact and θ-rigid fuzzy sets in fuzzy topological spaces**, Fuzzy Sets and Systems, 43 (1991), 57-68.

[12] Nanda, S., **Strongly compact fuzzy topological spaces, Fuzzy Sets and Systems**, 42 (1991), 259-262.

[13] Pu, Pao Ming and Liu, Ying Ming, **Fuzzy topology I. Neighbourhood structure of a fuzzy point and Moore-Smith Convergence, J. Math Anal. Appl.**, 76 (1980), 571-599.

[14] Sinha, S.P. and Malakar, S., **On s-closed fuzzy topological spaces**, J. Fuzzy Math., 2 (1) (1994), 95-103.

[15] Zadeh, L.A. **Fuzzy Sets**, Inform. Control, 8 (1965), 338-353.

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