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ON r-FUZZY WEAKLY b-OPEN FUNCTIONS

N. RAJESH[†] AND R. VENNILA

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Abstract. In this paper, we introduce and characterize a new class of functions called r-fuzzy weakly b-open (r-fuzzy weakly b-closed) functions between smooth fuzzy topological spaces.

1. Introduction and Prelimanaries

Functions is a well-known notion in topology. The second author studied various types of functions in Topology [4, 5, 21]. The fuzzy concept has invaded almost all branches of Mathematics since its introduction by Zadeh [23]. Fuzzy sets have applications in many fields such as information [17] and control [20]. The theory of fuzzy topological spaces was introduced and developed by Chang [1] and since then various notions in classical topology have been extended to fuzzy topological spaces. Sŏstak [18] and Kubiak [10] introduced the fuzzy topology as an extension of Chang's fuzzy topology. It has been developed in many directions. Sŏstak [19] also published a survey article of the developed areas of fuzzy topological spaces. This paper is organized as follows. In the second section, we provide some background on smooth fuzzy topological spaces and r-fuzzy sets. We introduce and characterize a new class of functions called r-fuzzy weakly b-open (r-fuzzy weakly b-closed) functions between smooth fuzzy topological spaces in the third section. Moreover, conclusion and scope for future work were discussed at the end.

2. Preliminaries

Definition 2.1. A fuzzy point x_t in X is a fuzzy set taking value $t \in I_0$ at x and zero elsewhere, $x_t \in \lambda$ if and only if $t \leq \lambda(x)$. A fuzzy set λ is quasicoincident with a fuzzy set μ, denoted by $\lambda q \mu$, if there exists $x \in X$ such that $\lambda(x) + \mu(x) > 1$. Otherwise $\lambda \bar{q} \mu$.

Definition 2.2. [10, 18] A function $\tau : I^X \to I$ is called a smooth fuzzy topology on X if it satisfies the following conditions:

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[†] *Corresponding author.*