ON SOME FUZZY CATEGORIES OF MANY-VALUED TOPOLOGICAL SPACES

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The concept of a fuzzy category was introduced by A.Šostak in [1] and later was studied in a series of papers see, e.g. [2].

First we recall the concept of an (L-)fuzzy category in the form appropriate for our merits. Let $L = (L, \leq, \land, \lor, *)$ be a $cl$-monoid with top element $1$ and bottom element $0$, in particular a complete Heyting algebra (when $\land = *$). An (L)-fuzzy category is a pair $(C, \mu)$ where $C$ is an ordinary category with the class of objects $O(C)$, the class of morphisms $M(C)$, and $\mu : M(C) \to L$ an $L$-subclass of the class of morphism such that: $\mu(g \circ f) \geq \mu(g) * \mu(f)$ whenever composition $g \circ f$ is defined in the category $C$ and for each $X \in O(C)$ $\mu(e_X) = 1$ where $e_X$ is the identity morphism.

On the other hand in [3] we studied some categories of many-valued sets and many-valued topological spaces, in particular, categories $\text{SET}(L)$, $\text{TOP}(L)$ and $\text{FTOP}(L)$. The aim of this talk is to introduce new fuzzy categories $\mathcal{F}-\text{SET}(L)$, $\mathcal{F}-\text{TOP}(L)$ and $\mathcal{F}-\text{FTOP}(L)$ by applying the method of fuzzification [2] to the categories $\text{SET}(L)$, $\text{TOP}(L)$ and $\text{FTOP}(L)$, to discuss some properties of these fuzzy categories and relations between them.

REFERENCES

