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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 $L = (L, \leq, \wedge, \vee, *)$ be a *cl*-monoid with top element 1 and bottom element 0, in particular a complete Heyting algebra (when $\wedge = *$). *An* (L)*-fuzzy category* is a pair $(\mathcal{C}, \mu)$ where $\mathcal{C}$ is an ordinary category with the class of objects $\mathcal{O}(\mathcal{C})$, the class of morphisms $\mathcal{M}(\mathcal{C})$, and $\mu : \mathcal{M}(\mathcal{C}) \to L$ 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 $\mathcal{C}$ and for each $X \in \mathcal{O}(\mathcal{C})$ $\mu(e_X) = 1$ 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 **SET**(L), **TOP**(L) and **FTOP**(L). The aim of this talk is to introduce new fuzzy categories $\mathcal{F}$-**SET**(L), $\mathcal{F}$-**TOP**(L) and $\mathcal{F}$-**FTOP**(L) by applying the method of fuzzification [2] to the categories **SET**(L), **TOP**(L) and **FTOP**(L), to discuss some properies of these fuzzy categories and relations between them.

REFERENCES

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