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ON BORNOLOGICAL STRUCTURES ON MANY-VALUED SETS[1]

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The concept of an L-bornology or a fuzzy bornology was first introduced in [3]. The aim of this talk is, patterned after [3], to introduce the concept of an L-bornology in the context of many-valued sets and to start the study of L- bornological structures on many-valued sets.

Let $L = (L, \leq, *)$ be a *cl*-monoid [1], whose top and bottom elements are 0 and 1 respectively. Further, let (X, E) be a many-valued set, see e.g. [2] and, let $L^{(X,E)}$ be the family of its extentional L-subsets, that is L-sets $A : X \to L$ such that $A(x) * E(x, x') \leq A(x')$ $\forall x, x' \in X$. Given an L-set A let $\tilde{A}$ be its extentional hull, that is the smallest extensional L-set larger or equal than A.

The central concept concerned in this talk is defined below.

An *L-bornology* on a many-valued set (X, E) is a family $\mathcal{B} \subseteq L^{(X,E)}$ such that

(1) $\bigvee\{B \mid B \in \mathcal{B}\} = 1_X$;

(2) $B \in \mathcal{B},\ C \in L^{(X,E)},\ C \leq B \Longrightarrow C \in \mathcal{B}$;

(3) $B_1, B_2 \in \mathcal{B} \Longrightarrow B_1 \vee B_2 \in \mathcal{B}$.

An L-bornology $\mathcal{B} \subseteq L^X$ will be called *a strict L-bornology* if it satisfies the following stronger version of the first axiom: (1′) $\tilde{1}_{\{x\}} \in \mathcal{B}\ \forall\, x \in X$.

The triple $(X, E, \mathcal{B})$ is called *a (strict) many-valued L-bornological space* and L-sets $B \in \mathcal{B}$ are called *bounded* in this space.

Some categorical properties of L-bornological many-valued spaces will be discussed.

REFERENCES

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