BORNOLOGICAL ALGEBRAS WHICH INDUCE A TOPOLOGY THAT GIVE A TOPOLOGICAL ALGEBRA STRUCTURE

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A *bornology* on a set X is a collection $\mathcal{B}$ of subsets of X which satisfies the following conditions:

(a) $X = \bigcup\limits_{B\in\mathcal{B}} B$;

(b) If $B \in \mathcal{B}$ and $C \subseteq B$, then $C \in \mathcal{B}$;

(c) If $B_1, B_2 \in \mathcal{B}$, then $B_1 \cup B_2 \in \mathcal{B}$.

A bornology on a vector space over $\mathbb{K}$ where $\mathbb{K}$ is the field of real or complex numbers is called a *vector bornology* if the following conditions are satisfied:

(d) If $B_1, B_2 \in \mathcal{B}$, then $B_1 + B_2 \in \mathcal{B}$;

(e) If $B \in \mathcal{B}$ and $\lambda \in \mathbb{K}$, then $\lambda B \in \mathcal{B}$;

(f) $\bigcup\limits_{|\lambda|\leqslant 1} \lambda B \in \mathcal{B}$ for every $B \in \mathcal{B}$.

Moreover, when X is an algebra we shall say that $(X, \mathcal{B})$ is a *bornological algebra* if $(X, \mathcal{B})$ satisfies the conditions $(a) - (f)$ and

(g) If $a \in X$ and $B \in \mathcal{B}$, then $aB, Ba \in \mathcal{B}$.

I will talk about some results which answer the question:

When a bornological algebra $(E, \mathcal{B})$ induces a topology τ on E such that (E, τ) is a topological algebra?

Moreover, I will give some results about bornological algebras which are inductive limit of bornological algebras.

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