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sequence $\beta_n x_n$, so with no loss of generality we can assume $x_n \to 0$.

Now suppose the sequence α_n is such that $\alpha_n x_n$ is bounded. Then there is a sequence of positive numbers M_q, $q = 1,2,\ldots$, such that $\|\alpha_n x_n\|_q \leq M_q$ holds for all n. Also, given p and a subsequence x_n' of x_n there is a $q > p$ such that for the corresponding subsequence α_n' of α_n

$$0 \leq \liminf_n \|\alpha_n' x_n'\|_p \leq M_q \liminf_n \frac{\|\alpha_n' x_n'\|_p}{\|\alpha_n' x_n'\|_q} = 0.$$

It follows from this that $\alpha_n x_n \to 0$. Thus E is not boundedly levered. ▲

We remark that we do not know an example of a non-normable metrizable LCS which is boundedly levered.

These results may suggest a serious shortcoming in this generalization of the Fréchet derivative (cf. also Chapter 3 of [5]).

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