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Fachbereich Mathematik und Statistik
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TOPOLOGICAL ALGEBRAS–SS 2018

Recap Sheet 3

*This recap sheet aims to self-assess your progress and to recap some of the definitions and concepts introduced in the previous lectures. You do **not** need to hand in solutions, but please try to answer as many questions as you can since this is a very good training in preparation of your final exam. If you should have any problem, please do not hesitate to attend Maria's office hours on Thursdays 2-3 pm in room F408.*

1) Recall the definition of lc algebra. How does this notion differ from the notion of lmc algebra?

2) Give a sufficient condition for an lc algebra to be an lmc algebra.

3) Recall the definition of separating family of seminorms on a $\mathbb{K}$–algebra. Is the topology of an lmc algebra always induced by a separating family of seminorms?

4) Give an example of an m-barrelled TA and an example of a TA which is lmc but not m-barrelled.

5) Characterize the finest lmc topology on a $\mathbb{K}$–algebra in terms of neighbourhoods and in terms of seminorms.

6) Show that the finest lmc topology on a $\mathbb{K}$–algebra turns it into a m-barrelled algebra.

7) Is the finest lmc topology on a $\mathbb{K}$–algebra Hausdorff?

8) Define a character of a $\mathbb{K}$−algebra which is discontinuous w.r.t. the finest lmc topology.

9) Recall the definition of A-convex algebra. Give a sufficient condition for an A-convex algebra to be lmc.

10) Give necessary and sufficient conditions for an lmc algebra to be metrizable.