26/10/2018 ***InterCity - seminar***

Bern - Neuchâtel - **Fribourg/Freiburg**

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Time	Speaker	Talk
14:00	Nathan Bowler (Hamburg)	**Representing matroids over hyperfields**
		Abstract: I'll explain how to simultaneously generalise the notions of linear subspaces, matroids, valuated matroids, and oriented matroids, as well as phased matroids in the sense of Anderson-Delucchi. All of these can be thought of as matroids represented in a certain sense over hyperfields. In fact, there are (at least) two natural notions of represented matroid in this context, and I will discuss both. I'll give "cryptomorphic" axiom systems for such matroids in terms of circuits, Grassmann-Plücker functions, and dual pairs, and explain some basic duality theorems. I'll also outline an argument that if the hyperfield F is doubly distributive then the two different notions of representation over F coincide.
15:30	Yaroslav Shitov (HSE Moscow)	**An inequality of Wielandt and growth in the algebra of matrices**
		Abstract: A classical result of Wielandt states that, if some power of a 0-1 matrix has all entries positive, then this happens for all powers beginning from $(\text{size}-1)^2 + 1$. The following question is regarded as a quantum version of this result: Let S be a set of D-by-D matrices and assume that every matrix can be written as a homogeneous polynomial of some fixed degree k in S. Then, is the same statement true for k in $O(D^2)$? In a joint effort with Mateusz Michalek, we were able to prove an $O(D^2 \log D)$ bound, improving the previously known one of $O(D^4)$. The same problem but without the word 'homogeneous' is also of interest, and the speaker was able to get an $O(D \log D)$ bound for it.

The talks will take place in Room 1.309 of the Earth Sciences building (PER 0) at the university of Fribourg.

For further informations please contact the organisers:

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