Bern - Neuchâtel - Fribourg/Freiburg

Time	Speaker	Talk
14:00	Alberto Ravagnani (Neuchâtel)	**Network Coding and the Etzion-Silberstein conjecture**
		In 2000 it was discovered that employing coding strategies in network communications gives substantial gains in information throughput. These results spawned a vast research area, called "Network Coding", which is very promising from an applied viewpoint. The reliability of a network communication is guaranteed by subspace codes, mathematical objects that enable the network receivers to repair corrupted information packets. A major problem in Network Coding is the construction of large subspace codes.
		In this talk we study a specific technique to produce large subspace codes, called the "multilevel construction". The technique relies on the existence of large spaces of matrices having prescribed zero entries and rank bounded from below by a given parameter. In 2009, Etzion and Silberstein derived an upper bound for the dimension of such spaces, and conjectured that the bound is sharp over finite fields. We establish the Etzion-Silberstein conjecture in several cases, including those that are most relevant in Network Coding. As an application, we construct some of the largest known subspace codes. Using methods from Algebraic Geometry, we also show that the E-S conjecture does not hold over algebraically closed fields.
		The new results in the talk are joint work with Elisa Gorla.
15:30	Michał Lasoń (Bern)	**On the toric ideal of a matroid**
		When an ideal is defined only by combinatorial means, one expects to have a combinatorial description of its set of generators. An attempt to achieve this description often leads to surprisingly deep combinatorial questions.
		White's conjecture is an example. It asserts that the toric ideal associated to a matroid is generated by quadratic binomials corresponding to symmetric exchanges. In the combinatorial language it means that if two multisets of bases of a matroid have equal union (as a multiset), then one can pass between them by a sequence of symmetric exchanges between pairs of bases.
		White's conjecture resisted numerous attempts since its formulation in 1980. We will review the progress made in last years, which led to the confirmation of the conjecture for high degrees (with respect to the rank of a matroid).

The talks will take place in the lecture room 0.108, on the ground floor of the building PER09 (Physiology), campus Pérolles, university of Fribourg.

For further informations please refer to the seminar's webpage

math.unifr.ch/intercity/

or contact the organisers:

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