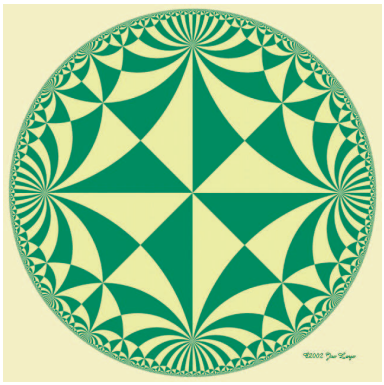
Oberseminar Geometrie
Department of Mathematics
University of Fribourg
Seminar room, Lonza dependence
Wednesday March 7, 2012, 10:20-12:00



Alexey Muranov (Toulouse)

Stable commutator length and conjugation-invariant normes in infinite simple groups

If G is a group and g an element of the derived subgroup $[G, G]$, the commutator length $cl(g)$ of g is the least positive integer n such that g can be written as a product of n commutators. The commutator width of G is the supremum of the commutator lengths of elements of $[G, G]$.

The stable commutator length $scl(g)$ of g is the infimum of $cl(g^n)/n$. As a function on $[G, G]$, stable commutator length is related to the space of homogeneous quasi-morphisms on G, and hence to the second bounded cohomology of G.

Until 1991 it was not known whether there exist simple groups of commutator width greater than 1. In 1992 Jean Barge and Étienne Ghys showed that stable commutator length is nontrivial on certain simple groups of diffeomorphisms (not finitely generated).

Small-cancellation theory can be used to construct finitely generated simple groups of infinite commutator width without stably unbounded conjugation-invariant norms, so that in particular the stable commutator length of every element in such group be zero.