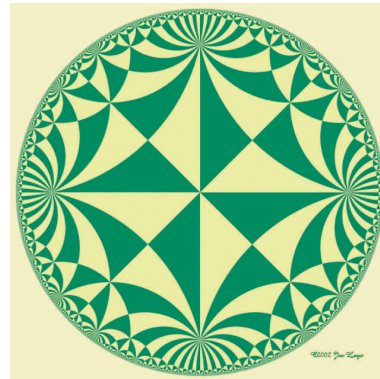


Oberseminar Geometrie
Department of Mathematics
University of Fribourg
Seminar room, Lonza dependence
Wednesday May 16, 2012, 10:20-12:00



Pacal Rolli (ETHZ)

Constructing Quasimorphisms

A quasimorphism on a group is a real-valued function that almost satisfies the homomorphism law $f(gh) = f(g) + f(h)$.

In a first part of the talk I will present some natural examples of quasimorphisms, e.g. for groups acting on the circle or fundamental groups of hyperbolic manifolds. I will then discuss different aspects of the theory of quasimorphisms, in particular the relation to stable commutator length and bounded cohomology. This will lead to the question whether a given group admits any non-trivial quasimorphisms, or more generally non-trivial quasi-cocycles. While there are certain non-existence results (e.g. for amenable groups or higher rank lattices), "negatively curved" groups tend to have a huge supply of non-trivial quasimorphisms. We illustrate this with a discussion of Brooks' counting quasimorphisms on free groups, together with their numerous generalizations by Fujiwara et al.

In the second part I will present two new constructions of quasimorphisms on free products. Brooks' quasimorphisms imitate a combinatorial property of homomorphisms (counting generators). The aspects that our constructions imitate are algebraic (splitting into free factors) and geometric (measuring distances in the Cayley graph) respectively.