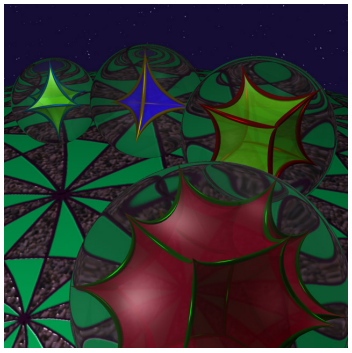
Oberseminar Geometrie
Department of Mathematics
University of Fribourg
Seminar room, Math II (Lonza)
Wednesday April 26, 2017, 10:20–12:00



ANDERS KARLSSON (University of Geneva and Uppsala University)

New general ergodic theorems, invariant metrics and their functionals

In complex analysis invariant metrics have played an important role in the understanding of holomorphic maps ever since Pick's reformulation of the Schwarz lemma in terms of the hyperbolic distance. A century has passed, and the geometry of metric spaces has become much more developed and appears in a variety of subjects. In analogy with functional analysis one defines metric functionals (an extension of Busemann functions) in particular to get a notion of weak compactness.

In a recent joint work with S. Gouëzel, a substantial refinement of Kingman's subadditive ergodic theorem is established and we use it to prove a multiplicative ergodic theorem (or a non-commutative law of large numbers) for maps semi-preserving a metric, formulated in terms of metric functionals. This applies in many contexts using the geometry of the relevant metric spaces, in particular it recovers Oseledets important theorem which is like a spectral theorem for products of random matrices. Our theorem also applies to bounded operators, holomorphic self-maps, and random walks on finitely generated groups.