JOURNEES DE GÉOMÉTRIE HYPERBOLIQUE – PROGRAMME and ABSTRACTS

All lectures will take place in **Room 0.108, Physiology Building PER 9**.

SCHEDULE

	Thursday		**Friday**
10:15	*Doctoral exam* *Matthieu Jacquemet*	**10:10 -11:00**	**Pavel Tumarkin** *Cluster algebras* *and reflection groups*
		Coffee break	*Mensa*
		11:30 - 12:20	**Jordane Granier** *A discrete subgroup of PU(2,1)* *whose limit set is homeo-* *morphic to the Menger curve*
lunch	*Brasserie le Commerce*	*lunch*	*Brasserie le Commerce*
14:10 - 15:00	**John Ratcliffe** *Salem numbers and* *arithmetic hyperbolic groups*		
Coffee break	*Mensa*	**14:30 - 15:20**	**John Parker** *Complex hyperbolic* *triangle groups*
15:30 - 16:20	**Hans-Christoph Im Hof** *The quest for orthoschemes*		
16:30 - 17:20	**Rafael Guglielmetti** *Commensurability of arithmetic* *hyperbolic Coxeter groups*		
		17:15 - 18:15	*Public thesis presentation:* **Jacquemet**
19:00	**Conference Dinner** *Restaurant Aigle Noir*	**18:15**	*Apéro, Pérolles 2*

ABSTRACTS

Vincent EMERY (Bern) : *CANCELLED*
Quasi-arithmetic hyperbolic lattices and volume

I will introduce the notion of quasi-arithmetic lattice (due to Vinberg) and discuss the volume of hyperbolic quotients by such lattices. The discussion will be illustrated by an explicit computation for a quasi-arithmetic Coxeter group in dimension 5.

Jordane GRANIER (Fribourg) :
A discrete subgroup of $PU(2,1)$ whose limit set is homeomorphic to the Menger curve

The limit set of a discrete subgroup of isometries of the hyperbolic space (real or complex) is defined as the set of accumulation points of an orbit. A result by M. Kapovich and B. Kleiner classifies the spaces of topological dimension 1 that can appear as limit sets of convex cocompact subgroups of $\mathrm{Isom}(\mathbb{H}^n)$: these are the circle, the Sierpinski carpet and the Menger curve. The only explicit examples known of groups with a limit set homeomorphic to the Menger curve are subgroups of $PO(n,1)$ constructed by M. Bourdon. In this talk, I will describe how to construct a new example in the isometry group of the complex hyperbolic plane $PU(2,1)$.

Rafael GUGLIELMETTI (Fribourg) :
Commensurability of arithmetic hyperbolic Coxeter groups

The classification of hyperbolic Coxeter groups up to commensurability is a difficult problem where numerous tools can be used but only partial answers are known. However, when we restrict ourselves to arithmetic groups, we can associate to each commensurability class a complete set of invariants. Moreover, when the dimension of the space is even, the invariant consists only of the ramification set of a single quaternion algebra, which is defined over $\mathbb{Q}$ if the group is non-compact and over a number field if the group is compact.

John PARKER (Durham) :
Complex hyperbolic triangle groups

It is well known that the group generated by reflections in the sides of a hyperbolic triangle is rigid, even when embedded in the isometry group of higher dimensional hyperbolic space. However it is possible to deform such a group when it is embedded in the isometry group of complex hyperbolic space. In his ICM talk, Rich Schwartz gave a series of conjectures about such groups. In particular, he conjectured that discreteness of these representations is controlled by a particular element. In this talk I will give a survey of the topic and then discuss certain cases where Schwartz's conjecture is true. This is joint work with Jieyan Wang and Baohua Xie and with Pierre Will.

John RATCLIFFE (Vanderbilt) :
Salem numbers and arithmetic hyperbolic groups

This talk is about a direct relationship between a certain class of algebraic integers called Salem numbers and translation lengths of hyperbolic elements of arithmetic hyperbolic groups that are determined by a quadratic form over a totally real number field.

Pavel TUMARKIN (Durham) :
Cluster algebras and reflection groups

Cluster algebras are defined inductively via repeatedly applied operation of mutation. During the last decade it turned out that the mutation rule appears in various contexts. We use linear reflection groups to build a geometric model for acyclic cluster algebras, where partial reflections play the role of mutations. Hyperbolic examples show up as partial cases of the general picture.