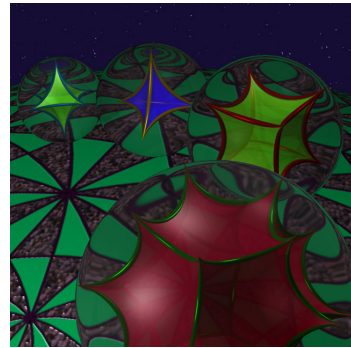


**Oberseminar Geometrie**  
Department of Mathematics  
University of Fribourg  
Seminar room, Math II (Lonza)  
**Tuesday May 29, 2018, 13:15-15:00**



MATTHIEU JACQUEMET  
(HES-SO Valais (Sion) and University of Fribourg)

## **Computational aspects of the classification of hyperbolic Coxeter polyhedra**

Hyperbolic Coxeter polyhedra are quite easy to describe, and yet they are of central interest in various quite deep contexts, such as small volume hyperbolic orbifolds, growth rate of groups, and sphere packings.

A hard question in this setting is the classification question. This is somehow surprising: the spherical and Euclidean Coxeter polyhedra exist in all dimensions, and we have a complete (and very short) classification for them. This is no longer the case in the hyperbolic space, where there is a dimensional bound for the existence of such objects, as well as a totally different situation as for the combinatorial types which are realizable.

In this talk, we will focus on combinatorial tools which can be used in order to (try to) exhibit new classes of hyperbolic Coxeter polyhedra, or even just one new example enjoying certain properties. The fact that these polyhedra have a very simple combinatorial description suggests that an algorithmic approach could be promising, but we are going to see what kind of difficulties can arise, and give a couple of ideas on how to address them.