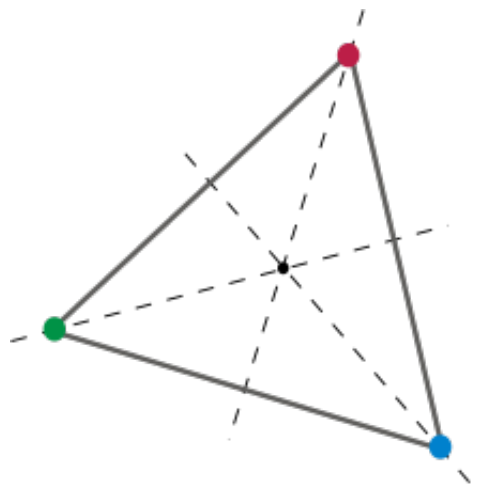


**Oberseminar Geometrie**  
Department of Mathematics  
University of Fribourg  
Physics 2.52  
**Wednesday October 12, 2022, 10:20**



ALEXANDER KOLPAKOV (UNINE)

### **Subspace stabilizers in hyperbolic lattices**

I will speak about a recent joint work with Mikhail Belolipetsky (IMPA, Brazil), Nikolay Bogachev (University of Toronto) and Leone Slavich (University of Pavia). It turns out that properly immersed totally geodesic  $m$ -dimensional suborbifolds of  $n$ -dimensional arithmetic hyperbolic orbifolds correspond to finite subgroups of the commensurator given a simple condition on  $m$  and  $n$ . We call such suborbifolds "finite centralizer subspaces" (or fc-subspaces) and use them to formulate an arithmeticity criterion: a hyperbolic orbifold is arithmetic if and only if it contains infinitely many fc-subspaces. In the first half of my talk I will first provide a survey of arithmetic manifolds and their algebraic and geometric properties, and then move to showcasing some of the ideas we use and results we obtain in the second part.