

Oberseminar Geometrie	Wednesday 20th November 2013
Department of Mathematics	10:20–12:00
University of Fribourg	Seminar room, Math. II (Lonza)

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‘Geodesic and translation ball packings in Thurston geometries’

The goal of this talk to generalize the problem of finding the densest geodesic and translation ball (or sphere) packing to the 3-dimensional homogeneous geometries (Thurston geometries)

$$\widetilde{\mathbf{SL}_2\mathbf{R}}, \mathbf{Nil}, \mathbf{S}^2 \times \mathbf{R}, \mathbf{H}^2 \times \mathbf{R}, \mathbf{Sol},$$

and to describe a candidate of the densest geodesic ball arrangement. The greatest density up till now is ≈ 0.85327613 whose horoball arrangement is realized in the hyperbolic space \mathbf{H}^3 . In this talk we show a geodesic ball arrangement in the $\mathbf{S}^2 \times \mathbf{R}$ geometry which density is ≈ 0.87499429 .

We have studied some new aspects of the horoball and hyperball packings in \mathbf{H}^n and relating to these we will show that the ball, horoball and hyperball packing problem is not settled in the n -dimensional ($n \geq 3$) hyperbolic space.