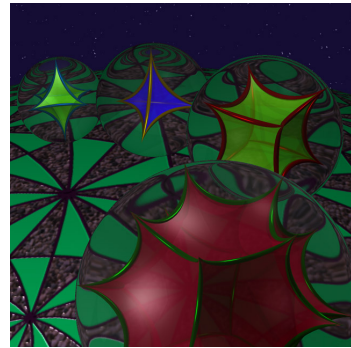


Oberseminar Geometrie
Department of Mathematics
University of Fribourg
Seminar room, Math II (Lonza)
Wednesday February 20, 2019, 10:20-12:00



ALEXANDR POLYANSKII (MIPT & EPFL)

Proof of László Fejes Tóth's zone conjecture

A plank of width w is a part of the d -dimensional Euclidean space \mathbb{R}^d that lies between two parallel hyperplanes at distance w . Given a convex body C , its width is the smallest w such that a plank of width w covers C . The following question solved by Bang is usually attributed to Tarski.

Tarski's plank problem: *If a convex body of width w is covered by a collection of planks in \mathbb{R}^d , then the total width of the planks is at least w .*

The spherical analog of a plank is a zone. A zone of width α on the 2-dimensional unit sphere is defined as the set of points within spherical distance $\alpha/2$ of a given great circle. In 1973, Fejes Tóth conjectured

Fejes Tóth's zone conjecture: *The total width of any set of zones covering the sphere is at least π .*

We completely resolve this conjecture and generalize it for the d -dimensional unit sphere S^d . This is joint work with Zilin Jiang.