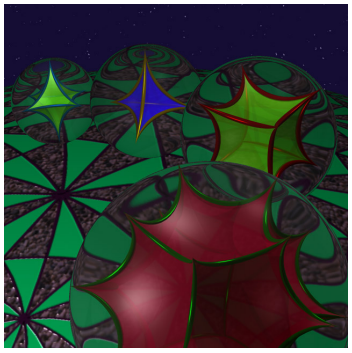
Oberseminar Geometrie
Department of Mathematics
University of Fribourg
Seminar room, Math II (Lonza)
Wednesday May 29, 2019, 10:20-12:00



MARTIN FITZI (Fribourg)

Solution of the Plateau-Douglas problem in Euclidean space

The classical problem of Plateau asks if a given Jordan curve in $\mathbb{R}^n$ can be filled with a minimal surface of disc-type. The Plateau-Douglas problem is a generalization of the former in two aspects: One considers several, disjoint Jordan curves and wishes these curves to be filled with a minimal surface of fixed higher genus. In the setting of Riemannian manifolds as ambient spaces, the existence of such a minimal surface was proven three decades ago by Jost, and the Plateau problem in metric spaces has been proven to admit a solution by a joint work of Alexander Lytchak and Stefan Wenger. Using ideas introduced in these works and tools from geometric function theory, Stefan Wenger and I recently showed the existence of a solution of the Plateau-Douglas problem in the setting of metric spaces. The key assumption on the space is the admission of a local quadratic isoperimetric inequality. In this talk, I will present the main ideas of our proof, and to avoid technical difficulties and make the talk more accessible, we will assume that the ambient space is Euclidean $\mathbb{R}^n$.