Regiomontanus PhD Seminar - Second Session

April 30th 2025

The concentration of measure phenomenon

Matteo Palmieri and Xiaopeng Cheng

The concentration of measure is a phenomenon at the interface between probability and high-dimensional geometry for which certain metric spaces, equipped with a positive measure, have most of the mass concentrated on a scale which is much smaller then the diameter of the space. We outline the main concepts with some examples (high dimensional spheres and cubes, manifolds with positive Ricci curvature, Gaussian spaces) and show an intriguing link between concentration and isoperimetric inequalities.