Asymptotic Geometric Analysis and Convex Geometry
Analyse géométrique asymptotique et géométrie convexe
(Org: **Alexander Litvak**, **Nicole Tomczak-Jaegerman** and/et **Vlad Yaskin** (Alberta))

DAVID ALONSO-GUTIERREZ, University of Alberta
Factoring Sobolev inequalities through classes of functions

We recall two approaches to recent improvements of the classical Sobolev inequality. The first one follows the point of view of Real Analysis while the second one relies on tools from Convex Geometry. We prove a connection between them.

FERENC FODOR, University of Szeged, Hungary
Convex bodies with a rolling ball and intrinsic volumes of random polytopes

This talk is based on joint results with K.J. Böröczky and D. Hug.

We will present asymptotic formulas for the expectation of intrinsic volumes of random polytopes for convex bodies which admit a rolling ball in the model where the random points are selected from the boundary of the convex body. We will also demonstrate that the rolling ball condition cannot be weakened while keeping the validity of the asymptotic formulas. The proof of the main result is based on a technique using the analytic properties of caps of the convex body. We will also point out how this technique is applicable to other models of random polytopes.

PETER PIVOVAROV, Texas A&M University
Rearrangements and Isoperimetric Inequalities

I will discuss rearrangement inequalities and their use in isoperimetric problems for convex bodies and classes of measures. The main example will be from joint work with G. Paouris on the expected volume of random convex sets.

ALINA STANCU, Concordia University
On some isoperimetric inequalities for the p-affine surface area

We will present some new inequalities relating the p-affine surface area to volumes. A couple of such inequalities will treat cases when one convex body contains another and we refer to them as containment isoperimetric inequalities. We will conclude with an application.

VIKTOR VIGH, University of Calgary
Disc-polygonal approximations of planar spindle convex sets

We shall work in the Euclidean plane. $S \subset E^2$ is a compact, spindle convex set if and only if S is the intersection of closed unit circles. The intersection of finitely many unit circles is called a disc-polygon. Assume that S has C^2 smooth boundary, and let P_n be a disc-polygon with at most n vertices inscribed in S such that P_n has maximal area. We prove an asymptotic result on the area of $S \backslash P_n$ as n tends to infinity. Similar results are given for circumscribed disc-polygons, and for the perimeter-deviation metric and the Hausdorff-metric. This is joint work with Ferenc Fodor.