1. Distribution of volume on isotropic convex bodies

The aim of the talks is to describe in a unified way recent developments related to the distribution of volume on isotropic convex bodies. A convex body K in $\mathbb{R}^n$ is called isotropic if it has volume one, center of mass at the origin, and there exists a constant $L_K > 0$ such that

$$\int_K \langle y, \theta \rangle^2 dy = L_K^2$$

for every $\theta \in S^{n-1}$. Our starting point is the well–known slicing problem which asks if there exists an absolute constant $C > 0$ such that $L_K \leq C$ for every isotropic convex body in any dimension. We focus on the work of G. Paouris on the family of the L_q–centroid bodies of an isotropic convex body K. The behavior of this family of bodies is closely related to the average behavior of the moments of linear functionals on K. We will describe this work and show how it leads to a unified proof of three recent results:

1. Sharp dimension-dependent concentration of volume.
2. Existence of "subgaussian directions".
3. Central limit theorem.

The first theorem was proved by Paouris and the other two were first obtained by Bo'az Klartag by different methods.