1120-52-9 **Alexander Koldobsky*** (`koldobskiya@missouri.edu`), Department of Mathematics, University of Missouri, Columbia, MO 65211. *The slicing problem for sections of proportional dimensions.*

We consider the following problem. Does there exist an absolute constant $C$ such that for every $n \in N$, every integer $1 \leq k < n$, every origin-symmetric convex body $L$ in $R^n$, and every measure $\mu$ with non-negative even continuous density in $R^n$,

$$\mu(L) \ \leq \ C^k \max_{H \in Gr_{n-k}} \mu(L \cap H) \ |L|^{k/n},$$

where $Gr_{n-k}$ is the Grassmanian of $(n-k)$-dimensional subspaces of $R^n$, and $|L|$ stands for volume? This question is an extension to arbitrary measures (in place of volume) and to sections of arbitrary codimension $k$ of the hyperplane conjecture of Bourgain, a major open problem in convex geometry.

We show that the inequality holds for arbitrary origin-symmetric convex bodies, all $k$ and all $\mu$ with $C \sim \sqrt{n}$, and with an absolute constant $C$ for some special classes of bodies. We also prove that for every $\lambda \in (0,1)$ there exists a constant $C = C(\lambda)$ so that the inequality holds for every $n \in N$, every origin-symmetric convex body $L$ in $R^n$, every measure $\mu$ with continuous density and the codimension of sections $k \geq \lambda n$. (Received December 19, 2015)