1098-52-42 **Alexander Koldobsky*** (`koldobskiya@missouri.edu`), Department of Mathematics, University of Missouri, Columbia, MO 65211. *Hyperplane inequalities for measures of convex bodies.*

The hyperplane problem asks whether there exists an absolute constant C so that for any origin-symmetric convex body K in R^n

$$|K|^{\frac{n-1}{n}} \leq C \max_{\xi \in S^{n-1}} |K \cap \xi^\perp|,$$

where $\xi^\perp$ is the central hyperplane in R^n perpendicular to ξ, and $|K|$ stands for volume of proper dimension. The problem is still open, with the best-to-date estimate $C \sim n^{1/4}$ established by Klartag, who slightly improved the previous estimate of Bourgain. It is much easier to get a weaker estimate with $C = \sqrt{n}$.

In this talk we show that the $\sqrt{n}$ estimate holds for arbitrary measure in place of volume. Namely, if L is an origin-symmetric convex body in R^n and μ is a measure with non-negative even continuous density on L, then

$$\mu(L) \ \leq \ \sqrt{n} \frac{n}{n-1} c_n \max_{\xi \in S^{n-1}} \mu(L \cap \xi^\perp) \ |L|^{1/n} \ ,$$

where $c_n = |B_2^n|^{\frac{n-1}{n}} / \left|B_2^{n-1}\right| < 1$, and B_2^n is the unit Euclidean ball in R^n. We deduce this inequality from a stability result for intersection bodies. We also present lower dimensional and complex versions of this inequality, and prove that $\sqrt{n}$ can be replaced by an absolute constant for some special classes of convex bodies. (Received December 24, 2013)