Alexander Koldobsky (koldobsk@math.missouri.edu), Mathematics Department, University of Missouri, Columbia MO, USA, ***Positive definite functions and stable random vectors.***

ABSTRACT. We say that a random vector $X = (X_1, ..., X_n)$ in $\mathbb{R}^n$ is an n-dimensional version of a random variable Y if for any $a \in \mathbb{R}^n$ the random variables $\sum a_i X_i$ and $\gamma(a)Y$ are identically distributed, where $\gamma : \mathbb{R}^n \to [0, \infty)$ is called the standard of X. An old problem is to characterize those functions γ that can appear as the standard of an n-dimensional version. In this talk, we prove the conjecture of Lisitsky that every standard must be the norm of a space that embeds in L_0. This result is almost optimal, as the norm of any finite dimensional subspace of L_p with $p \in (0, 2]$ is the standard of an n-dimensional version (p-stable random vector) by the classical result of P.Lèvy. An equivalent formulation is that if a function of the form $f(\|\cdot\|_K)$ is positive definite on $\mathbb{R}^n$, where K is an origin symmetric star body in $\mathbb{R}^n$ and $f : \mathbb{R} \to \mathbb{R}$ is an even continuous function, then either the space $(\mathbb{R}^n, \|\cdot\|_K)$ embeds in L_0 or f is a constant function. Combined with known facts about embedding in L_0, this result leads to several generalizations of the solution of Schoenberg's problem on positive definite functions.