The vector balancing constant of two convex bodies $U, V \subset \mathbb{R}^n$, $\beta(U, V)$, is defined to be the smallest $b > 0$ such that for any n vectors in U, some signed combination of these vectors lies in a b-scaled copy of V. This constant is the subject of the well-known Komlós conjecture, which asks whether $\beta(B_2^n, B_\infty^n)$ is bounded by a universal constant, where B_2^n, B_∞^n are the unit ball and cube, respectively, in dimension n. We will introduce a related parameter $\alpha(U, V) \leq \beta(U, V)$, defined via lattices, and review some known inequalities for these two parameters. In 1997, W. Banaszczyk and S. Szarek showed that (for some universal $\theta > 0$) if a convex body has gaussian measure $\gamma_n(V) \geq 1/2$, then $\alpha(B_2^n, V) \leq \theta$; this yields $\alpha(B_2^n, B_\infty^n) = O(\sqrt{\log n})$ for the cube. They conjecture that a similar inequality holds for convex bodies of gaussian measure $p < 1/2$, i.e., that there exists a non-increasing function f (independent of n) such that $\beta(B_2^n, V) \leq f(\gamma_n(V))$. We answer this question in the affirmative for the parameter α.

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