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On the Monotonicity of Perimeter of Convex Bodies

Let $n \geq 2$ and let $\Phi: \mathbb{R}^n \rightarrow [0, \infty)$ be a positively 1-homogeneous and convex function. Given two convex bodies $A \subset B$ in \mathbb{R}^n , the monotonicity of anisotropic Φ -perimeters holds, i.e. $P_\Phi(A) \leq P_\Phi(B)$. In this note, we prove a quantitative lower bound on the difference of the Φ -perimeters of A and B in terms of their Hausdorff distance.

Keywords: Convex body, anisotropic perimeter, Hausdorff distance, Wulff inequality.

MSC: 52A20; 52A40