



Mathematics > Functional Analysis

# On the approximation of a polytope by its dual $L_{\{p\}}$ -centroid bodies

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We show that the rate of convergence on the approximation of volumes of a convex symmetric polytope  $P$  in  $\mathbb{R}^n$  by its dual  $L_{\{p\}}$ -centroid bodies is independent of the geometry of  $P$ . In particular we show that if  $P$  has volume 1,  $\lim_{p \rightarrow \infty} \frac{p}{\log p} \left( \frac{|Z_{\{p\}}^{\text{circ}}(P)|}{|P^{\text{circ}}|} - 1 \right) = n^2$ .

We provide an application to the approximation of polytopes by uniformly convex sets.

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