UPPER BOUNDS FOR THE COVERING NUMBER OF CENTRALLY SYMMETRIC CONVEX BODIES IN $\mathbb{R}^n$

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Abstract. The covering number $c(K)$ of a convex body $K$ is the least number of smaller homothetic copies of $K$ needed to cover $K$. We provide new upper bounds for $c(K)$ when $K$ is centrally symmetric by introducing and studying the generalized $\alpha$-blocking number $\beta_\alpha^c(K)$ of $K$. It is shown that when a centrally symmetric convex body $K$ is sufficiently close to a centrally symmetric convex body $K'$, then $c(K)$ is bounded by $\beta_\alpha^c(K')$ from above, where $\alpha$ is a properly chosen number. Related results in Minkowski geometry are also presented.


Keywords and phrases: Banach-Mazur distance, Birkhoff orthogonality, blocking number, covering number, generalized blocking number, Hadwiger’s covering conjecture, radial projection of bisector, shadow boundary.

REFERENCES


