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Optimal Radii-Algorithms

This talk is concerned with convex bodies in n-dimensional l_p-spaces that are presented by weak separation oracles. It studies the asymptotic relative accuracy, as $n \longrightarrow \infty$, of polynomial-time approximation algorithms for the four main radii of a body K and also for the maximum of the norm over K. The results on order of accuracy are all sharp when $p = 2$, are sharp for width and inradius when $1 \leq p \leq 2$, are sharp for diameter, circumradius, and norm-maximization when $2 \leq p \leq \infty$, and in the remaining cases are within a logarithmic factor of being sharp.