

Equilateral sets and a Schütte Theorem for the 4-norm

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Abstract. A well-known theorem of Schütte (1963) gives a sharp lower bound for the ratio of the maximum and minimum distances between $n + 2$ points in n -dimensional Euclidean space. In this note we adapt Bárány's elegant proof (1994) of this theorem to the space ℓ_4^n . This gives a new proof that the largest cardinality of an equilateral set in ℓ_4^n is $n + 1$, and gives a constructive bound for an interval $(4 - \varepsilon_n, 4 + \varepsilon_n)$ of values of p close to 4 for which it is known that the largest cardinality of an equilateral set in ℓ_p^n is $n + 1$.