

BOUNDS ON THE COVERING RADIUS OF SPHERICAL DESIGNS

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ABSTRACT

A spherical t -design C is a finite subset of the n -dimensional unit Euclidean sphere such that the average of an n -variable polynomial f over the set is equal to the average of f over the whole sphere. The maximal possible $t=t(C)$ is called strength of C . We use polynomial (also called linear programming) methods to derive upper and lower bound on the covering radius of spherical designs with prescribed dimension, strength and cardinality. Both types (lower and upper) of bounds have similar nature. For small t , we are able to find the best possible upper bounds which can be derived by the proposed method.

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