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NON-ISOTROPIC DISTANCE MEASURES FOR LATTICE-GENERATED SETS

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Abstract

We study distance measures for lattice-generated sets in $\mathbb{R}^d$, $d \geq 3$, with respect to non-isotropic distances $|\cdot|_K$, induced by smooth symmetric convex bodies K. An effective Fourier-analytic approach is developed to get sharp upper bounds for the second moment of the weighted distance measure.

The implications of these estimates are discussed in the context of the general Erdös-Falconer distance problem.

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