Publ. Mat. **63** (2019), 343–360
DOI: 10.5565/PUBLMAT6311912

LATTICE POINTS IN ELLIPTIC PARABOLOIDS

Fernando Chamizo and Carlos Pastor

Abstract: We consider the lattice point problem corresponding to a family of elliptic paraboloids in $\mathbb{R}^d$ with $d \geq 3$ and we prove the expected to be optimal exponent, improving previous results. This is especially noticeable for $d = 3$ because the optimal exponent is conjectural even for the sphere. We also treat some aspects of the case $d = 2$, getting for a simple parabolic region an Ω-result that is unknown for the classical circle and divisor problems.

2010 Mathematics Subject Classification: 11P21, 11L07.

Key words: Elliptic paraboloids, lattice point problem, exponential sums.