

Estimates for representation numbers of quadratic forms

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Abstract

Let $-D$ be the discriminant of an imaginary quadratic field, and let $f \in \mathbb{Z}[x_1, x_2]$ be a primitive positive binary quadratic form having discriminant $-D$. Define $r_f(n) := \frac{1}{w} \#\{\mathbf{x} \in \mathbb{Z}^2 \mid f(\mathbf{x}) = n\}$ to be the number of representations of n by f up to automorphisms of f . In this paper estimates and asymptotics for the quantity $\sum_{n \leq x} r_f(n)^\beta$ are given, for all $\beta \geq 0$ and uniformly in $D = o(x)$.

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