Abstract

Let $f \in \mathbb{Z}[x, y]$ be a primitive positive binary quadratic form with fundamental discriminant and let

$$\theta(f, z) := \sum_{n=0}^{\infty} r(f, n) e(nz) = E(f, z) + S(f, z)$$

be the corresponding θ-series, decomposed into an Eisenstein series $E(f, z)$ and a cusp form $S(f, z) = \sum b(f, z)e(nz)$. For any real $\beta > 0$, the exact order of magnitude of the counting function $\sum_{n \le x} |b(f, n)|^{2\beta}$ is given. For integral $\beta > 0$, a meromorphic continuation of $\sum |b(f, n)|^{2\beta} n^{-s}$ to the halfplane $\Re s > 0$ is obtained. The number of sign changes of $b(f, n)$ for $n \le x$ is estimated.

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