

Asymptotic of Fourier coefficients of Hecke eigenforms at integers represented by a binary quadratic form of a fixed discriminant

By MANISH KUMAR PANDEY (Dehradun) and LALIT VAISHYA (Chennai)

Abstract. In this article, we establish the general asymptotic behaviour of the Fourier coefficients of the Hecke eigenforms supported at the integers represented by a primitive integral positive-definite binary quadratic form of the fixed discriminant $D < 0$ under the assumption that the class number $h(D) = 1$.

As a consequence, we also obtain a quantitative result for the number of sign changes of the sequence of normalised Fourier coefficients $\lambda_f(n)$ of Hecke eigenforms f over the indices, represented by a primitive integral positive definite binary quadratic form of the fixed discriminant $D < 0$ when class number $h(D) = 1$; in the interval $(X, 2X]$ for sufficiently large X . Moreover, under the assumption of the Lindelöf hypothesis, the above-said sequence has at least $X^{\frac{1}{2}-\epsilon}$ many sign changes.

MANISH KUMAR PANDEY
DEPARTMENT OF MATHEMATICS
UPES
DEHRADUN
INDIA

LALIT VAISHYA
THE INSTITUTE OF MATHEMATICAL SCIENCES
(A CI OF HOMI BHABHA NATIONAL INSTITUTE)
CIT CAMPUS, TARAMANI
CHENNAI - 600 113, TAMILNADU
INDIA

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