

Abstract

As an application of the vector sieve and uniform results on the Fourier coefficients of cusp forms of half-integral weight it is shown that any sufficiently large number $n \equiv 3 \pmod{24}$ with $5 \nmid n$ is expressible as a sum of three squares of integers having at most 521 prime factors and also as a sum of three squares of squarefree numbers.

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Keywords: sums of squares, almost primes, sieve methods, three squares theorem, vector sieve, Fourier coefficients of modular forms of half-integral weight