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A note concerning certain exponential sums related to cusp forms. (English) Zbl 1211.11095
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The holomorphic cusp forms can be represented as Fourier series

$$F(z) = \sum_{n=1}^{\infty} a(n)n^{\frac{\kappa-1}{2}} e(nz),$$

where $\text{Im } z > 0$ and the numbers $a(n)$ are called normalized Fourier coefficients, and κ is the weight of the form. Similarly, the Maass forms can be written as follows

$$u(z) = u(x + iy) = \sqrt{y} \sum_{n \neq 0} t(n) K_{i\kappa}(2\pi|n|y) e(nz)$$

with the K -Bessel functions, where $\kappa > 0$ depends on the eigenvalue of the non-Euclidean Laplacian connected to the form.

This paper considers certain specific exponential sums related to $a(n)$ and $t(n)$, and gives some estimates.

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MSC:

- [11L07](#) Estimates on exponential sums
- [11F11](#) Holomorphic modular forms of integral weight
- [11F30](#) Fourier coefficients of automorphic forms

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Keywords:

[divisor function](#); [estimates](#); [exponential sums](#); [Fourier series](#); [holomorphic cusp forms](#); [Maass forms](#)

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