On Fourier coefficients of modular forms of half-integral weight

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Summary. In my talk, I reported about recent joint work with S. Gun in which a new proof was given that for any non-zero cusp form of half-integral weight in the plus space of level 4 (not necessarily a Hecke eigenform) there exist infinitely many fundamental discriminants D such that the Fourier coefficients evaluated at $|D|$ are non-zero. The proof uses a new type of Dirichlet series built out of the squarefree coefficients of a form of half-integral weight. The result was first proved (usuing totally different methods) by Saha.

By adapting the resonance method due to K. Soundararajan one can in fact demonstrate that such coefficients must take quite large values.

The above mentioned results and their proofs can be found in [1].

References

[1] S. Gun, W. Kohnen and K. Soundararajan, Large Fourier coefficients of modular forms of half-integral weight, http://arxiv.org/abs/2994.14450

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