

A Whipple formula revisited

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A well-known formula of Whipple relates certain hypergeometric values ${}_7F_6(1)$ and ${}_4F_3(1)$. In this paper we revisit this relation from the viewpoint of the underlying hypergeometric data HD , to which there are also associated hypergeometric character sums and Galois representations. We explain a special structure behind Whipple's formula when the hypergeometric data HD are primitive and defined over rationals. As a consequence, the values of the corresponding hypergeometric character sums can be explicitly expressed in terms of Fourier coefficients of certain modular forms. We further relate the hypergeometric values ${}_7F_6(1)$ in Whipple's formula to the periods of modular forms.

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