

Siegel modular forms associated to indefinite quadratic forms

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Vignéras [1] showed that there exists a simple criterion for generating (almost holomorphic) modular forms associated to an indefinite quadratic form on \mathbb{R}^n , i. e. by solving a second-order differential equation examples in the form of theta series may be obtained. Considering Siegel modular forms, one can construct theta series with modular transformation behavior, which is described by Freitag [2] for positive definite quadratic forms. In a similar way this can be done for indefinite quadratic forms by choosing suitable coefficients in the theta series. Those fulfill a system of second-order partial differential equations which turns out to be a straightforward generalization of the one-dimensional case. However, showing that this is also a sufficient criterion to determine whether a theta series transforms like a modular form seems to be more difficult.

References

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- [2] E. Freitag, Siegelsche Modulfunktionen, *Grundlehren der mathematischen Wissenschaften, Bd. 254*, Berlin: Springer 1983.