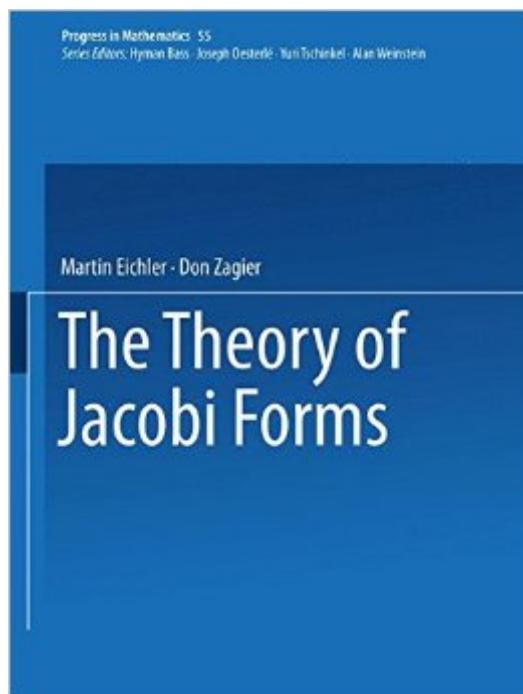


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# The Theory Of Jacobi Forms (Progress In Mathematics)



## Synopsis

The functions studied in this monograph are a cross between elliptic functions and modular forms in one variable. Specifically, we define a Jacobi form on  $SL(2, \mathbb{Z})$  to be a holomorphic function  $\varphi$  on the upper half-plane  $\mathbb{H}$  satisfying the  $\tau \mapsto \tau + 1$  transformation equations  $\varphi(\tau + 1, z) = e^{2\pi i z} \varphi(\tau, z)$  and  $\varphi\left(\frac{-1}{\tau}, z\right) = e^{-\pi i z} \varphi(\tau, z)$  (1) and having a Fourier expansion of the form  $\varphi(\tau, z) = \sum_{n=0}^{\infty} \sum_{r=-n}^{n-m} c(n, r) q^n \tau^r$  (2) where  $q = e^{2\pi i z}$ . Here  $k$  and  $m$  are natural numbers, called the weight and index of  $\varphi$ , respectively. Note that the function  $\varphi(\tau, 0)$  is an ordinary modular form of weight  $k$ , while for fixed  $\tau$  the function  $\varphi(\tau, z)$  is a function of  $z$  normally used to embed the elliptic curve  $E(\tau)$  into a projective space. If  $m=0$ , then  $\varphi$  is independent of  $z$  and the definition reduces to the usual notion of modular forms in one variable. We give three other examples of situations where functions satisfying (1)-(2) arise classically: 1. Theta series. Let  $Q$  be a positive definite integer valued quadratic form and  $B$  the associated bilinear form.

## Book Information

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