falls $c \neq 0$,

$$\vartheta_{v+r}|_{r/2} A = n(a)^{-r/2} e^{\pi i\, tr(ab v^2)} \vartheta_{av+r} \quad \text{falls } c = 0.$$

(Beachte $\# \tilde{r}/r < \infty$ nach dem Lemma)

Beweis (völlig analog zu Fall $K = \mathbb{Q}$): Etwa $c \neq 0$:

~~$\vartheta_{v+r}\left(\ldots, \frac{\sigma_i(a) z_i + \sigma_i(b)}{\sigma_i(c) z_i + \sigma_i(d)}, \ldots\right) = \sum_{u \in v+r} e^{\pi i\, tr\left(\left(\frac{a}{c} - \frac{1}{c(cz+d)}\right) u^2\right)}$~~

~~$= \sum_{u \in v+r} e^{\pi i \sum}$~~

~~Schreibe $\frac{\sigma_i(a) z + \sigma_i(b)}{\sigma_i(c) z + \sigma_i(d)} \frac{\sigma_i(a)}{\sigma_i(c)} = \frac{1}{\sigma_i(c)(\sigma_i(c) z_i + \sigma_i(d))}$ durch $\vartheta_{v+r}(\ldots \sigma_i(a) z_i + \sigma_i(b))$~~

Schreibe $\frac{a z_1 + b}{c z_1 + d} = \frac{a}{c} - \frac{1}{c(c z_1 + d)}$ (und analog für $\sigma_i(A) z_i$),

durch

$$\vartheta_{v+r}\left(\frac{a z_1 + b}{c z_1 + d}, \ldots\right) = \vartheta_{v+r}\left(\frac{a}{c} - \frac{1}{c(c z_1 + d)}, \ldots\right)$$

$$= \sum_{\substack{v' \in \tilde{r}/cr \\ v' \equiv v\,(r)}} e^{\pi i\, tr \frac{a}{c} v'^2} \vartheta_{v' + cr}\left(-\frac{1}{c(c z_1 + d)}, \ldots\right)$$

(Satz 1)

$$= \sum_{v' \in \hat{r}/cr} \sum_{w \in \widehat{cr}/cr} e^{\pi i(\text{quadratische Form in } v', w)} \vartheta_{w + cr}(c^2 z_1, \ldots)$$

$$= \sum_{v' \in \hat{r}/cr} \sum_{w \in \widehat{cr}/cr} e^{\pi i(\ldots)} \vartheta_{cw + c^2 r}(z_1, \ldots, z_n)$$

genaueres Studium $\rightsquigarrow$ Formel in Satz 2.