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CORRIGENDUM TO "EICHLER COHOMOLOGY FOR GENERALIZED MODULAR FORMS OF REAL WEIGHTS"

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(Communicated by Ken Ono)

We correct the following:

(1) The statement of Theorem 3.5 [1] is missing, but the proof is correct. Replace Theorem 3.5 in [1] by the following theorem:

Let k be any real number, $k \leq -2$ or $k > \psi > 0$ and let v be a weakly parabolic multiplier system of weight k. Suppose$\{\phi_V \mid V \in \Gamma\}$ is a parabolic cocycle of weight $-k$ in $\mathbb{P}$; that is, $\phi_V \in \mathbb{P}, \phi_{V_1 V_2} = \phi_{V_1} \mid_v^{-k} V_2 + \phi_{V_2}$, for all $V_1, V_2 \in \Gamma$, and for each j such that $0 \leq j \leq t$, there exists $\phi_{Q_j} = \phi_j \mid_v^{-k} Q_j - \phi_j$.

Then there exists a function Φ, holomorphic in H, such that

$$\Phi \mid_v^{-k} V - \Phi = \phi_V \tag{1.1}$$

for all $V \in \Gamma$, and with expansions at the parabolic cusps $q_j, 0 \leq j \leq t$, of the form

$$\Phi(z) = \phi_j(z) + (z - q_j)^{-k} \sum_{m=-m_j}^{\infty} a_m(j) exp \left\{ \frac{-2\pi i(m + \kappa_j)}{\lambda_j(z - q_j)} \right\}, \tag{1.2}$$

for $1 \leq j \leq t$,

$$\Phi(z) = \phi_0(z) + \sum_{m=-m_0}^{\infty} a_m(0) exp \left\{ \frac{2\pi i(m + \kappa)z}{\lambda} \right\} \tag{1.3}$$

for $j = 0$.

(2) On pages 389 and 390, we previously argued as follows: In order to eliminate the principal part of Φ at the cusps, we used Petersson's theorem to say that there exists a function f with the same principal part as Φ, but with unitary mulitplier system. Then we had to multiply this function f by an entire generalized modular form E of weight 0. Instead, we replace this argument by the following argument: Petersson's theorems work in the context of complex weights and hence the existence of the function f can be of generalized multiplier system and there is no need to multiply by E.

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References

[1] Wissam Raji, *Eichler cohomology of generalized modular forms of real weights*, Proc. Amer. Math. Soc. **141** (2013), no. 2, 383–392, DOI 10.1090/S0002-9939-2012-11315-2. MR2996943

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