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Erratum : "On the supercuspidal representations of GL_N, N the product of two primes"

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ERRATUM

On the supercuspidal representations of GL_N, N the product of two primes

(Philip Kutzko and David Manderscheid)

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Since the abovementioned paper appeared in print, we have carefully read Waldspurger's paper [Wa] (all references as in the original paper), something we should certainly have done far earlier! As a result of our reading we have learned two things. First, several of the results in section 5 either may be found in [Wa] or are easy consequences of results found there. Second, after reading section II of [Wa] we have learned that it is never appropriate to invoke the phrase "theory of the Heisenberg group and the oscillator representation" as a substitute for careful argumentation. To be precise, our assertions about the representations Λ and Λ_r found in section 5 are not properly justified there and need, to say the least, further comment. Here, then, is what needs to be done to support the assertions in section 5 (all notation as in the original).

1. The representation Λ referred to just prior to Lemma 5.6 certainly exists but not for the reasons stated. A proof of the existence of this representation is given in Proposition II.4 of [Wa]. In order that our Lemma 5.6 hold, Λ must have the additional properties ascribed to it in Waldspurger's Proposition II.4; our Lemma 5.6 is now a trivial consequence of Lemmas VI.1.1 and VI.1.2 of [Wa].

2. In order to obtain the representation Λ_0 referred to just prior to Lemma 5.6, one must use the construction found in section III of [Wa]. There, Waldspurger constructs a representation Θ of a group K, both Θ and K depending on certain data. If, in his notation, this data is chosen to be $r=1$, $t=R$, $F=F_0$, $F_1=E=F'$, $\chi_1=\psi_\alpha$, $\xi_1=\theta$ and $\rho'=1$, then K is seen to be our group J_0^{0, m_0-1} and our Λ_0 should be taken to be Θ. It is then necessary to show that there is a certain compatibility between Λ and Λ_0, namely that one can choose a character χ of $F^\times$ such that the representation induced by Λ_0 on the group $U(\mathscr{A}_{0,E}).U^{m-1}(\mathscr{A}_F)$ coincides with the restriction to that group of the representation $\Lambda\otimes\chi\cdot\det$. This last point is not trivial but a verification is not difficult; this verification as well as other details will be provided upon request.

With this choice of Λ_0, the assertions made prior to Lemma 5.7 for the case $r=0$ are now valid and Lemma 5.8 follows as in our paper or from the Hecke Algebra isomorphism given in Theorem VI.2.2 of [Wa].

3. In order to obtain the representation Λ_r, $r>0$, referred to just prior to Lemma 5.6, one must imitate Waldspurger's construction of Θ and K alluded to above. With Λ_r constructed in this way, the appropriate compatibility condition for Λ and Λ_r is obtained and the assertions made prior to Lemma 5.7 are now valid for arbitrary r. In order that our proof of Lemma 5.7 now be complete, one need only verify (using Lemma II.5 of [Wa]) that the element x defined in Lemma 5.7 does indeed intertwine Λ_r.

In conclusion, we wish to apologise for any confusion the abovedescribed errors may have caused.

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