ERRATUM TO TEMPERED SUBGROUPS AND REPRESENTATIONS WITH MINIMAL DECAY OF MATRIX COEFFICIENTS

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Remark (2) following Corollary B in the introduction in [4] is false (what we missed was that when a non-trivial irreducible unitary representation ρ of $\prod_{i=1}^k G_i$ is decomposed into the tensor product $\otimes_{i=1}^k \rho_i$, ρ_i an irreducible unitary representation of G_i, it happens that ρ_i is trivial for some i). This remark was used only in Proposition 5.7-(2) whose claim must be retracted.

In Proposition 3.4 in [4], the assumption rank $(G) \geq 2$ should be added (in fact, in the whole paper, this is assumed). Even though the statement of Proposition 3.4 with this assumption is correct, its proof is incomplete. At line 25 in P. 366, we claimed that for each H_i, there exists an abelian unipotent subgroup U_i of G of dimension at least 2 such that H_i normalizes U_i and $C_G(H_i) \cap U_i$ is trivial. This is true for $G = SL_n(\mathbb{R})$, but false in general. Here we complete the proof. Since Φ is an irreducible root system, one can find a root $\beta_i' \in \Phi$ such that the set $\Psi := \{k\beta_i + k'\beta_i' \in \Phi \mid k, k' \in \mathbb{Z}\}$ is an irreducible root system of rank 2. Let G_0 be the connected closed subgroup of G whose Lie algebra is generated by the one-dimensional root sub-algebras $\mathfrak{u}_\gamma$, $\gamma \in \Psi$. The type of G_0 is one of A_2, B_2 and G_2. To complete the proof, we only need to show that for any $h \in H_i$,

$$(*) \qquad |\langle \rho_{\alpha i}(h) v_{\alpha i}, w_{\alpha i} \rangle| \leq \Xi_{H_i}(h) \|v_{\alpha i}\| \cdot \|w_{\alpha i}\|$$

in the case when G_0 is of type B_2 and β_i is a *longer* root in Ψ, and when G_0 is of type G_2 and β_i is a *shorter* root in Ψ, since in other cases the claim (line 25, P. 366) is correct and hence (*) follows from Proposition 3.3. For the case of G_2, it is shown in [3] (Proposition 2.4 there) that the restriction to H_i of a non-trivial irreducible unitary representation of G_0 is strongly $L^{1+\epsilon}$ from which (*) follows by [1]. When G_0 is of type B_2, we use the well known fact that the $K \cap G_0$-matrix coefficients of a non-trivial unitary representation of G_0 are bounded by $\Xi_{G_0}^{1/2}$ (cf. [1], [2]). Hence the function on the left in (*) is bounded by $\Xi_{G_0}^{1/2}|_{H_i}$, which can be shown to be in $L^{2+\epsilon}(H_i)$ by direct computation. Therefore (*) follows by [1].

References

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