CORRIGENDUM TO: BRANCHING GRAPHS FOR FINITE UNITARY GROUPS IN NONDEFINING CHARACTERISTIC

THOMAS GERBER AND GERHARD HISS

Olivier Dudas has kindly pointed out that Lemma 3.2 and Proposition 3.3 of [1] are wrong in the stated generality. The error occurs in the last statement of Lemma 3.2, claiming that ${}^*R_M^G(T) \in kG\text{-mod}_Z$. This is, however, true under the following additional hypothesis, as the proof of Lemma 3.2 shows.

Hypothesis. If $x \in N$ such that ${}^xL \leq M$, then $R_{{}^xL}^M({}^xX) \cong Z$.

The results of Sections 4 and 5 of [1] are not affected by this error, as the above hypothesis is satisfied if L and M are pure Levi subgroups of $G := G_n$ and X is a weakly cuspidal unipotent kL-module.

To see this, we adopt the notation of [2, Subsections 2.1, 2.2]. If G, L and M are as above, we may assume that $M = L_J$ and $L = {}^yL_I$ for some $y \in N$ and with $I, J \subseteq S$ left connected. Now let $x \in N$ such that ${}^xL \leq M$, i.e. ${}^{xy}L_I \leq L_J$. It follows that there is $w \in W$ with ${}^wW_I \leq W_J$. Writing $w = ucv$ with $u \in W_J$, $c \in D_{JI}$ and $v \in W_I$, it follows that ${}^cW_I \leq W_J$, i.e. ${}^cW_I = {}^cW_I \cap W_J = W_{{}^cI \cap J}$. Now ${}^cI \cap J$ is left connected by the lemma of [2, Subsection 2.2]. As $|{}^cW_I| = |W_I|$, this implies that ${}^cW_I = W_I$. In turn, ${}^wW_I = {}^{uc}W_I = {}^uW_I$. It follows that ${}^xL$ and L_I are conjugate by an element of $N \cap M$. As $L \leq M$, the analogous argument applies to L and L_I. Thus there is $z \in N \cap M$ such that ${}^{zx}L = L$. Replacing the pair $({}^xL, {}^xX)$ by $({}^{zx}L, {}^{zx}X)$, we may therefore assume that $x \in N_G(L)$. Now x fixes every ordinary unipotent character of L. In turn, x fixes every unipotent ℓ-modular character of G and thus ${}^xX \cong X$ as kL-modules. It follows that $R_{{}^xL}^M({}^xX) \cong R_L^M(X) = Z$.

We take this opportunity to correct a notational twist in [2, Subsection 2.2]. In the lemma and the proof of the proposition of this subsection, the symbol D_{IJ} has to be replaced by D_{JI}, the set of distinguished double coset representatives for $W_J \backslash W / W_I$.

Date: September 21, 2017.

2000 *Mathematics Subject Classification.* 20C33, 20C08, 20G42, 17B37.

Key words and phrases. Harish-Chandra series, endomorphism algebra, Iwahori-Hecke algebra, branching graph, unitary group, Fock space, crystal graph.

References

[1] Gerber, T., Hiss, G. (2017). Branching graphs for finite unitary groups in nondefining characteristic. *Comm. Algebra* 45:561–574.

[2] Gerber, T., Hiss, G., Jacon, N. (2015). Harish-Chandra series in finite unitary groups and crystal graphs. *Int. Math. Res. Notices* 2015:12206–12250. doi:10.1093/imrn/rnv058.

Lehrstuhl D für Mathematik, RWTH Aachen University, 52062 Aachen, Germany

E-mail address: `thomas.gerber@math.rwth-aachen.de`

E-mail address: `gerhard.hiss@math.rwth-aachen.de`