Errata to "Introduction to quantum groups" (2004 printing) by G. Lusztig

on p.9,line-5 inside the last bracket [] replace a' by a'' and t' by t''.

On p.31, in 3.4.6 line 6 delete (a) (twice) and in 3.4.6 line -2 replace $E_i^{(a)}, F_i^{(a)}$ by E_i, F_j.

On p.33, line 13, replace M_λ by Λ_λ.

On p.40, line -3 replace $n+2m$ by $n+2m-2$.

On p.40, line -1 replace $n-2m$ by $n-2m+2$.

On p.41 lines 5,6 replace "If $x \in M^n(0)$, then by definition, $(c-s_n)x = 0$" by "We have $M^n(0) = 0$."

On p.41 lines 9,10,11,12, replace (four times) $n+2m$ by $n+2m-2$.

On p.42 delete lines 1,2.

On p.42 line 6, replace roman m,n by italic m,n.

On p.45, the equalities in line -2 of 5.2.6 should read
$v^{\langle \mu,\lambda\rangle - \langle i,\lambda\rangle\langle \mu,i'\rangle} = v^{\langle \mu,\langle \mu,i'\rangle i,\lambda\rangle} = v^{\langle \mu',\lambda\rangle}$.

On p.45 the line "This follows immediately from the previous lemma" in 5.2.7 should read: "This has been stated in the proof of the previous lemma."

On p.49, lines -5, -7 insert 2 in front of the second Σ.

On p.50, line 4, replace 2 by 4 in front of the second Σ.

On p.56, Lemma 7.1.4 should read:

Assume that $m = \alpha n + 1$. We have
$F_j f^+_{n,m;e} - f^+_{n,m;e} F_j = \tilde{K}_{-j} \frac{v_j^{n-1}}{v_j - v_j^{-1}} f^+_{n-1,m;1} - \tilde{K}_j \frac{v_j^{-n+1}}{v_j - v_j^{-1}} f^+_{n-1,m;-1}$.

On line 3 and 4 of p.57, the factors $v_i^{er(\alpha n - m+1)}$ should be be deleted.

On p.68, at the end of 9.1.2 one should insert the line: "Here $g_{\mathbf{i}} : \mathbf{V}_{\mathbf{i}} \longrightarrow \mathbf{V}_{\mathbf{i}}$ is the restriction of g."

On p.71 line -8 replace $G \times_P F$ by $G \times_Q F$.

On p.72, line 7 replace $\mathbf{T}'_{\mathbf{i}}$ by $\mathbf{T}_{\mathbf{i}}$.

On p.77 in 9.3.1 line -8 replace $\gamma'(\mathbf{i}) \geq \gamma(\mathbf{i})$ by $\gamma'_{\mathbf{i}} \geq \gamma_{\mathbf{i}}$ and $\gamma'(\mathbf{i}) > \gamma(\mathbf{i})$ by $\gamma'_{\mathbf{i}} > \gamma_{\mathbf{i}}$.

On p.85, line 11, insert) before =.

On p.87, lines 2,3 of 10.3.2, delete "and $\mathbf{T}_{\mathbf{i}'} = 0$ for all $\mathbf{i}' \in \mathbf{I} - \mathbf{I}'$"

On p.91 (line 7,8,12,18) replace $\dots(a^*)$ by $\cdots \oplus (a^*)$ (in five places).

On p.113, lines -13,-12 replace "a-orbit" by "orbit".

On p.118, line 8 of 14.2.2, replace $p_b \in \mathbf{Z}$ by $p_b \in \mathbf{Q}$.

On p.124, line 2 of 14.4.11 replace $\theta^{\langle i,\lambda\rangle+1}$ by $\theta_i^{\langle i,\lambda\rangle+1}$.

On p.128, Ref.6 add "I.H.E.S." before 67.

On p.132, line 1 of 16.1.2(b) replace $v^{-t(t-1)/2}$ by $v_i^{-t(t-1)/2}$.

On p.138 line -7,-5,-3 replace last $\mathcal{L}(M))$ by $\mathcal{L}(M)$.

On p.138 line -2 replace last all $\mathcal{L}(M))$ by $\mathcal{L}(M)$ (three times).

On p.164, line 6 of 19.1.1, replace $S\rho_1$ by $\rho_1 S$.

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On p.171, line 4: replace "Let $b \in \Lambda_\lambda$." by: "Let $b \in \Lambda_\lambda$, $b \neq 0$."

On p.177 line -2 replace $\overline{\omega(u)\chi(\eta)}$ (following the second =) by $\overline{\omega(u)} \cdot \overline{\chi(\eta)}$.

On p.181 in lines 2,5,6 replace $d_{b,\theta_i,b',n}$ by $d_{\beta,\theta_i,\beta',n}$.

On p.181 in lines 2,6 replace $|b'|$ by $|\beta'|$.

On p.185 in line -8,-9 replace "$\lambda'_1, \lambda''_1, \lambda'_2, \lambda''_2$ and any $t \in \mathbf{U}(\lambda'_1 - \lambda''_1)$, $s \in \mathbf{U}(\lambda'_1 - \lambda''_1)$,"

by

"$\lambda'_1, \lambda''_1, \lambda'_2, \lambda''_2$ in X, any ν_1, ν_2 in $\mathbf{Z}[I]$ such that $\lambda'_1 - \lambda''_1 = \nu_1$, $\lambda'_1 - \lambda''_1 = \nu_2$ (in X) and any $t \in \mathbf{U}(\nu_1)$, $s \in \mathbf{U}(\nu_2)$,"

On p.190 line-1 replace $M_\lambda \otimes \mathcal{T}'$ by ${}^\omega M_\lambda \otimes \mathcal{T}'$.

On p.220, part (d) of Theorem 27.3.2 and the first two lines of the proof are missing. Thus, at the bottom of p.220 (after 27.3.2(c)) add:

"(d) The natural homomorphism $\mathcal{L} \cap \Psi(\mathcal{L}) \longrightarrow \mathcal{L}/v^{-1}\mathcal{L}$ is an isomorphism.

The element $b_1 \diamond b'_1 = \sum_{b_2,b'_2} \pi_{b_1,b'_1,b_2,b'_2} b_2 \otimes b'_2$ satisfies the requirements of (a). This shows the existence in (a). It is also clear that the elements"

On p.228 the diamond in line 2 of 28.2.6 should be of the same size as the diamond in line 4 of 28.2.6.

On p.237 in line 2 of 29.5.1 replace "on $\dot{\mathbf{U}}[\geq \lambda]$ for some $\lambda \in X^+$" by: "on some two-sided ideal of finite codimension of $\dot{\mathbf{U}}$."

On p.240 first line of 30.1.7, remove one dot after "Example".

On p.320 in line 5 of 40.1.2 replace $l(w) = 1$ by $l(w) = 0$.

On p.320 in line 6 of 40.1.2 replace $l(w) > 1$ by $l(w) > 0$.

On p.325, line -10, replace [7] by [6].

Remark on the proof of Proposition 3.5.4. We give a more detailed proof of Proposition 3.5.4 based on results in Chapter 23. Let $\pi_{\lambda',\lambda''}$ be as in 23.1.1. From the definition we see that if $u \in \mathbf{U}$ satisfies $\pi_{\lambda_1,\lambda_2}(u) = 0$ for any λ_1, λ_2 in X then $u = 0$.

Let $a = \sum_i a_i i \in \mathbf{N}[I]$, $b = \sum_i b_i i \in \mathbf{N}[I]$, $\lambda \in X$, $J(\lambda, a, b) = \sum_i \mathbf{U}F_i^{a_i+1} + \sum_i \mathbf{U}E_i^{b_i+1} + \sum_{\mu \in Y}(K_\mu - v^{\langle \mu,\lambda\rangle})$. Let $u \in \cap_{a,b,\lambda} J(\lambda, a, b)$. By 3.5.3 it is enough to show that $u = 0$. Hence it is enough to show that $\pi_{\lambda_1,\lambda_2}(u) = 0$ for any λ_1, λ_2 in X. If $\langle i, \lambda_2\rangle = a_i - b_i$ for all $i \in I$ we have $\pi_{\lambda_1,\lambda_2}(J(\lambda_2, a, b)) \subset P(\lambda_2, a, b)$ (notation of 23.3.3). Hence it is enough to show that for any $\zeta \in X$ we have $\cap P(\zeta, a, b) = 0$ where the intersection is taken over all a, b such that $\langle i, \zeta\rangle = a_i - b_i$ for all i. Using the isomorphism $\dot{\phi}$ in 23.2.5 we see that we may assume that our root datum is simply connected. We identify X^+ with $\mathbf{N}[I]$ by $\lambda \mapsto \underline{\lambda}$ where $\underline{\lambda} = \sum_i \langle i, \lambda\rangle i$. It is enough to show that for any $\zeta \in X$ we have $\cap_{\lambda',\lambda \in X^+;\zeta=\lambda'-\lambda} P(\zeta, \underline{\lambda}', \underline{\lambda}) = 0$. For $\lambda', \lambda \in X^+$ such that $\zeta = \lambda' - \lambda$ we have an isomorphism $\dot{\mathbf{U}}1_\zeta \longrightarrow \mathbf{f} \otimes \mathbf{f} = {}^\omega M_\lambda \otimes M_{\lambda'}$ (see 23.3.1(c)) which by 23.3.5 carries $P(\zeta, \underline{\lambda}', \underline{\lambda})$ onto $\mathcal{T}_\lambda \otimes \mathbf{f} + \mathbf{f} \otimes \mathcal{T}_{\lambda'}$ where $\mathcal{T}_\lambda$ (resp. $\mathcal{T}_{\lambda'}$) is the kernel of the canonical homomorphism $\mathbf{f} = {}^\omega M_\lambda \longrightarrow {}^\omega \Lambda_\lambda$ (resp. $\mathbf{f} = M_{\lambda'} \longrightarrow \Lambda_{\lambda'}$). It is then enough to show that

$\cap_{\lambda,\lambda' \in X^+;\zeta=\lambda'-\lambda}(\mathcal{T}_\lambda \otimes \mathbf{f} + \mathbf{f} \otimes \mathcal{T}_{\lambda'}) = 0$.

Assume that x belongs to the last intersection. We have $x = \sum_{\nu \in F,\nu' \in F'} \mathbf{f}_\nu \otimes \mathbf{f}_{\nu'}$

where F, F' are finite subsets of $\mathbf{N}[I]$. We can find $\lambda \in X^+$ such that $\lambda + \zeta \in X^+$,
$\sum_i \langle i, \lambda \rangle > \mathrm{tr}(\nu) + \mathrm{tr}(\nu')$,
$\sum_i \langle i, \lambda + \zeta \rangle > \mathrm{tr}(\nu) + \mathrm{tr}(\nu')$
for any $\nu \in F, \nu' \in F'$. If $x \neq 0$ then for such λ we have $x \notin \mathcal{T}_\lambda \otimes \mathbf{f} + \mathbf{f} \otimes \mathcal{T}_{\lambda+\zeta}$. This shows that $x = 0$. This proves 3.5.4.