*Erratum***Pro- p -Iwahori Hecke algebra and supersingular $\overline{\mathbf{F}}_p$ -representations****Marie-France Vignéras**

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We give some corrections to the article “Pro- p -Iwahori Hecke algebra and supersingular $\overline{\mathbf{F}}_p$ -representations” (Math. Ann. 331, 523–556 (2005)). The morphism $W^{(1)} \rightarrow W$ does not split in general, although it does for $GL(n, F)$, this modifies the Iwahori-Matsumoto quadratic relations and the Bernstein’s relations; μ is an automorphism and not an anti-automorphism; the extension of a null central character to the commutative subring $\mathcal{A}^{(1)}$ is not unique. These errors are not essential and the main results remain true. A corrected version of the article is posted on <http://www.math.jussieu.fr/vigneras/publications.html>.

To simplify, we suppose that the root system is irreducible and reduced.

- 1) In the section 1.2, the exact sequence $1 \rightarrow T(\mathbf{F}_q) \rightarrow W^{(1)} \rightarrow W \rightarrow 1$ does not splits, although it splits for the group $G = GL(n, F)$. The exact sequence splits on X but not on W_o . We will denote by $?^{(1)}$ the inverse image in $W^{(1)}$ of a subset $?$ of W .
- 2) The Iwahori-Matsumoto quadratic relations should be written for $\sigma \in S^{(1)}$ lifting $s \in S$. They are $T_\sigma^2 = qT_{\sigma^2} + T_\sigma \tau_\sigma$ where

$$\tau_\sigma := T_{n_s^{-1}\sigma} \tau_s, \quad \tau_s := \sum_{t \in T_s(\mathbf{F}_q)} T_t, \quad n_s := w_{\alpha_s} \text{ if } s \neq s_o, \quad n_{s_o} = h_{\alpha_{s_o}}(p_F) w_{\alpha_{s_o}},$$

where α_s is the root associated to s as in 2.1 and $S = S_o \cup s_o$. For $\sigma = n_s$, $T_{n_s}^2 = qT_{h_{\alpha_s}(-1)} + T_{n_s} \tau_s$.

- 3) T_s^* should be replaced by $T_{n_s}^* := T_{h_{\alpha_s}(-1)}(T_{n_s} - \tau_s)$.
- 4) In the corollary 2, the words automorphism and anti-automorphism should be permuted.
- 5) In the part 3) of the corollary 3, the twisted tensor product should be $\mathbf{Z}[\Omega^{(1)}] \hat{\otimes}_{\mathbf{Z}[T(\mathbf{F}_q)]} \mathcal{H}_{aff}^{(1)}$.

- 6) We denote by $\phi : W \rightarrow W^{(1)}$ a section of sets such that $\phi(1) = 1$, by c the cocycle such that $\phi(w)\phi(w') = c(w, w')\phi(ww')$. In the definition 2, the ring should be the R -algebra $\mathcal{H}_R(\gamma)$, and the cocycle should appear in the braid and quadratic relations. They are

$$(T_w \varepsilon_\gamma)(T_{w'} \varepsilon_\lambda) = \lambda c(w, w') T_{ww'} \varepsilon_\lambda,$$

$$(T_s \varepsilon_\gamma)(T_s \varepsilon_\lambda) = q \lambda c(s, s) \varepsilon_\lambda + (q - 1) \lambda (n_s^{-1} \phi(s)) T_s \varepsilon_\lambda \text{ if } s \in S_\lambda, \\ = q \lambda c(s, s) \varepsilon_\lambda \text{ if } s \notin S_\lambda.$$

The isomorphism class of $\mathcal{H}_R(\gamma)$ does not depend on the choice of ϕ, c . For $\phi(s) = n_s, c(s, s) = h_{\alpha_s}(-1)$.

- 7) In the lemma 1, one should consider the c -twisted product $R[W] \tilde{\otimes}_c R[\gamma]$ of R -basis $e_w \otimes \varepsilon_\lambda$ for $(w, \lambda) \in W \times \gamma$ and product $(e_{w'} \otimes \varepsilon_{\lambda'})(e_w \otimes \varepsilon_\lambda) = \lambda c(w', w) e_{w'w} \otimes \varepsilon_{w^{-1}(\lambda') \varepsilon_\lambda}$.
- 8) In the lemma 2, the group should be $GL(n, F)$ and γ, γ' should be the W_o -orbits of characters $\lambda, \lambda' \in \hat{T}(\mathbf{F}_q)$ with the same stabilizer in W_o and such that the sign $\varepsilon := \lambda \lambda'^{-1}(h_{\alpha_s}(-1))$ does not depend of $s \in S_\lambda$. When ϕ is the canonical splitting with trivial cocycle, the isomorphism is

$$T_w \varepsilon_{w_o(\lambda)} \mapsto \varepsilon^{\ell(w)} T_w \varepsilon_{w_o(\lambda')}.$$

- 9) The formula in the proposition 2 should be written as

$$\chi_{\lambda, I}(T_t) = \lambda(t) \text{ for all } t \in T(\mathbf{F}_q), \quad \chi_{\lambda, I}(T_{n_s}) = 0 \text{ for all } s \in S - I, \\ \chi_{\lambda, I}(T_{n_s}) = -1, \text{ for all } s \in I.$$

- 10) The Bernstein's relations in the proposition 5 should be written for $\sigma \in S_o^{(1)}$ lifting $s \in S_o$. They are $T_\sigma \tilde{\theta}_? - \tilde{\theta}_? T_\sigma$ is 0 for $? = t$, and for $? = x \in X$ is equal to

$$\frac{\tilde{\theta}_x - \tilde{\theta}_{s(x)}}{1 - \tilde{\theta}_{h_s}} \tau_\sigma \text{ if } \alpha_s \notin 2\hat{X}, \quad \frac{\tilde{\theta}_x - \tilde{\theta}_{s(x)}}{1 - \tilde{\theta}_{2h_s}} (\tau_\sigma + \tilde{\theta}_{h_s} \tau_{\tilde{\sigma}}) \text{ if } \alpha_s \in 2\hat{X},$$

where $\tilde{\sigma} := \omega \sigma \omega^{-1} \in S^{(1)}$ lifts $\tilde{s} = \omega s \omega^{-1} \in S$, and $\omega \in W_{1,aff} := W_o X_{1,aff}$ with $X_{aff} \subset X_{1,aff}$ of index 2 is defined in [L2] §2.

- 11) In the propositions 6, 7, $W_o \times X^{(1)}$ should be replaced by $W_o^{(1)} \times X$.
- 12) In the proposition 8, anti-automorphism should be replaced by automorphism and the equality should be $E_x^+ = (-1)^{\ell(x)} \mu(E_x)$.
- 13) In the first paragraph after the definition 4, anti-automorphism should be replaced by automorphism, and “exchanging right and left modules” should be erased.
- 14) The penultimate paragraph after the definition 4 should be replaced by: When the characteristic of the field R is p , the characters of $\mathcal{A}^{(1)}$ extending a null central character ω are null and in bijection with the characters of $T(\mathbf{F}_q)$ extending the restriction of ω to $T(\mathbf{F}_q)^{W_o}$.
- 15) The corollary 5 of the appendix should be replaced by: The theorem 8 reflects the decomposition $\mathcal{H}_{\mathbf{F}_p}^{(1)} = \oplus_\gamma \mathcal{H}_{\mathbf{F}_p}(\gamma)$ over the S_n -orbits $\gamma \subset \hat{T}(\mathbf{F}_q)$ (corol-

lary 4), and that the number of simple $\mathcal{H}_{\overline{\mathbf{F}}_p}(\gamma)$ -modules of degree n , containing a character of $\mathcal{H}_{aff, \overline{\mathbf{F}}_p}(\gamma)$ and where p_F acts by a fixed scalar, is finite and depends only on the partition $p_\gamma(n)$ of n defined by γ (propositions 2 et 3).

Reference

1. Vignéras, M.-F.: Pro- p -Iwahori Hecke algebra and suppersingular $\overline{\mathbf{F}}_p$ -representations. Math. Ann. **331**, 523–556 (2005)