**Corrections to**
***Cohomological Induction and Unitary Representations*,**
**Chapters I to XII and the Four Appendices**

In the corrections below, allowance needs to be made for the difference between the typesetting process for the book and the typesetting process for this file. The book used Times fonts, and this file uses Computer Modern fonts.

Page 184, line 9. Change "$P_j(V \otimes_{\mathbb{C}} \bigwedge^m \mathfrak{c})^c \cong P_{m-j}(V^c)$" to "$P_j(V \otimes_{\mathbb{C}} (\bigwedge^m \mathfrak{c})^*)^c \cong P_{m-j}(V^c)$".

Page 185, line 5. Change "$H_j(\mathfrak{g}, K;\, V \otimes_{\mathbb{C}} \bigwedge^m(\mathfrak{g}/\mathfrak{k}))^* \cong$" to "$H_j(\mathfrak{g}, K;\, V \otimes_{\mathbb{C}} (\bigwedge^m(\mathfrak{g}/\mathfrak{k}))^*)^* \cong$".

Page 185, line 16. Change "$(\Pi_j(V \otimes_{\mathbb{C}} \bigwedge^m(\mathfrak{k}/\mathfrak{l})))^c \cong$" to "$(\Pi_j(V \otimes_{\mathbb{C}} (\bigwedge^m(\mathfrak{k}/\mathfrak{l}))^*))^c \cong$".

Page 185, line 27. Change "$H_j(\mathfrak{u},\, V \otimes_{\mathbb{C}} \bigwedge^m \mathfrak{u})^* \cong$" to "$H_j(\mathfrak{u},\, V \otimes_{\mathbb{C}} (\bigwedge^m \mathfrak{u})^*)^* \cong$".

Page 354, line $-2$. Change "$\Phi(u)(\mathrm{ad}\, X)$" to "$\Phi(u)((\mathrm{ad}\, X)$".

Page 358, 3rd display. Change this so that it becomes the following display and sentence fragment:

$$
\begin{aligned}
\text{“}uX \otimes (X_1 \cdots X_n \otimes z) &- u \otimes X(X_1 \cdots X_n \otimes z) \\
&= uX \otimes X_1 \cdots X_n \otimes z - u \otimes (\mathrm{ad}\, X)(X_1 \cdots X_n) \otimes z - u \otimes X_1 \cdots X_n \otimes Xz \\
&\mapsto uXX_1 \cdots X_n \otimes z - u(\mathrm{ad}\, X)(X_1 \cdots X_n) \otimes z - uX_1 \cdots X_n \otimes Xz + M_{n-1} \\
&= uXX_1 \cdots X_n \otimes z - u(\mathrm{ad}\, X)(x_1 \cdots X_n) \otimes z - uX_1 \cdots X_n X \otimes z + M_{n-1} \\
&= M_{n-1},
\end{aligned}
$$

the last equality holding since $XX_1 \cdots X_n - (\mathrm{ad}\, X)(X_1 \cdots X_n) - X_1 \cdots X_n X = 0$."

Page 374, line 7. Change "Then $F \otimes_{\mathbb{C}} Z$ has" to "Then any nonzero $U(\mathfrak{l})$ submodule of $F \otimes_{\mathbb{C}} Z$ has".

Page 374, line $-14$. Change "$h_{\delta(\mathfrak{u})} = h_{\delta(\mathfrak{u})}$" to "$h_{\delta(\mathfrak{u})}$".

Page 374, line $-2$. Change "it coincides with $F \otimes_{\mathbb{C}} Z^{\#}$" to "it is contained in $F \otimes_{\mathbb{C}} Z^{\#}$".

Page 375, line 8. Change "$(\lambda + \delta(\mathfrak{u}))(\gamma(z))$" to "$(\lambda + \delta(\mathfrak{u}))(\gamma(z))x$".

Page 418, display (6.43a). Change "$C(K)$" to "$R(K)$".

Page 420, line $-13$. Change "(6.45)" to "(6.45a)".

Page 446, line $-7$. Change "$e_\chi = P_\chi(V)$" to "$e_\chi V = P_\chi(V)$".

Page 451, line 9. Change "$U(\mathfrak{g})$" to "$\mathfrak{g}$".

Page 458, line $-2$. Change "$(1+t)^{-1}$" to "$(1-t)(1+t)^{-1}$".

Page 461, line $-2$. Change "$p(\mu + \delta(\mathfrak{u})) \neq 0$" to $p(\nu + \delta(\mathfrak{u})) \neq 0$".

Page 467, line 10. Change "$\mathrm{Tr}((\pi(g)\pi(X)\pi(G)^{-1})^d)$" to "$\mathrm{Tr}((\pi(g)\pi(X)\pi(g)^{-1})^d)$".

Page 474, line 6. Change "$X_\alpha = -2f$" to "$X_{-\alpha} = -2f$".

Page 491, line of (7.137). Change "$\varphi_F(u_0)$" to "$\varphi_F(u_i)$".

Page 493, statement of Lemma 7.140, second sentence. Change "Then $F \otimes_{\mathbb{C}} Z$ has a nonzero $U(\mathfrak{g})$ submodule with an infinitesimal character" to
"Then every nonzero $U(\mathfrak{g})$ submodule of $F \otimes_{\mathbb{C}} Z$ has a nonzero $U(\mathfrak{g})$ submodule with an infinitesimal character".

Page 493, proof of Lemma 7.140. Change the proof so that it reads:

"PROOF. Let $M$ be a nonzero $U(\mathfrak{g})$ submodule of $F \otimes_{\mathbb{C}} Z$. Theorem 7.133 says that $F \otimes_{\mathbb{C}} Z$ is $Z(\mathfrak{g})$ finite, and consequently $M$ is $Z(\mathfrak{g})$ finite. By Proposition 7.20, $M$ has a nonzero $U(\mathfrak{g})$ submodule $N$ with a generalized infinitesimal character. In turn, Corollary 7.27 provides a nonzero $U(\mathfrak{g})$ submodule $N$ of $M$ with an infinitesimal character."

Page 512, lines 1–6. Replace these lines by the following:
"In fact, if $s_\alpha^\beta$ and $s_\gamma^\delta$ are members of $S_\alpha^\beta$ and $S_\gamma^\delta$, respectively, then for any integer $n \geq \dim_{\mathbb{C}} F$, we have

$$\begin{aligned}(l(z) - \chi_\alpha(z))^n (s_\alpha^\beta s_\gamma^\delta) &= (z - \chi_\alpha(z))^n (s_\alpha^\beta s_\gamma^\delta) = ((z - \chi_\alpha(z))^n s_\alpha^\beta) s_\gamma^\delta \\ &= ((l(z) - \chi_\alpha(z))^n s_\alpha^\beta) s_\gamma^\delta = 0 \cdot s_\gamma^\delta = 0, \\ (r(z) - \chi_\delta(z))^n (s_\alpha^\beta s_\gamma^\delta) &= (s_\alpha^\beta s_\gamma^\delta)(z^t - \chi_\delta(z))^n = s_\alpha^\beta (s_\gamma^\delta (z^t - \chi_\delta(z))^n) \\ &= s_\alpha^\beta ((r(z) - \chi_\delta(z))^n s_\gamma^\delta) = s_\alpha^\beta \cdot 0 = 0.\end{aligned}$$

These prove that $S_\alpha^\beta S_\gamma^\delta \subseteq S_\alpha^\delta$ in (7.177). To see that $S_\alpha^\beta S_\gamma^\delta = 0$ if $\beta \neq -\gamma$, choose $z$ such that $\chi_\beta(z) \neq \chi_{-\gamma}(z)$. Since $r(z) - \chi_\beta(z)$ is nilpotent on $S_\alpha^\beta$, $r(z) - \chi_{-\gamma}(z)$ is invertible on $S_\alpha^\beta$. Given $s_\alpha^\beta$ in $S_\alpha^\beta$, put $t_\alpha^\beta = (r(z) - \chi_{-\gamma}(z))^{-n} s_\alpha^\beta$. Then

$$\begin{aligned}t_\alpha^\beta s_\gamma^\delta &= ((r(z) - \chi_{-\gamma}(z))^n s_\alpha^\beta) s_\gamma^\delta = s_\alpha^\beta (z^t - \chi_{-\gamma}(z))^n s_\gamma^\delta \\ &= s_\alpha^\beta ((l(z^t) - \chi_\gamma(z^t))^n s_\gamma^\delta) = s_\alpha^\beta \cdot 0 = 0.\end{aligned}$$

Hence $t_\alpha^\beta S_\gamma^\delta = 0$, and the verification of (7.177) is complete. Consequently"

Page 513, lines of (7.180). Change so as to read

$$S_\alpha^\beta N_\gamma \subseteq \begin{cases} N_\alpha & \text{if } \beta = -\gamma \\ 0 & \text{otherwise.} \end{cases}$$

Page 513, line −5. Insert one left parenthesis on the left side and delete two left parentheses on the right side so that the expression reads

$$(\operatorname{ad} X)(1 \otimes 1) = X(1 \otimes 1) - (1 \otimes 1)X = (X \otimes 1 + 1 \otimes X) - (X \otimes 1 + 1 \otimes X) = 0.$$

Page 516, line 10. Change "$\operatorname{Hom}_{\mathbb{C}}(V(\lambda), \lambda))$" to "$\operatorname{Hom}_{\mathbb{C}}(V(\lambda), V(\lambda))$".

Page 522, line 1. Change "§9" to "§10".

Page 650, display (10.45a). Although the statement of Theorem 10.44 is correct as written, it was not what was intended. Instead the hypothesis on $\lambda$ was to be that $\lambda$ is in the weakly good range in the sense of Definition 0.49. Thus change the inequality in (10.45a) from "$\mathrm{Re}\langle\lambda,\alpha\rangle \geq 0$" to "$\mathrm{Re}\langle\lambda+\delta(\mathfrak{u}),\alpha\rangle \geq 0$".

Page 662, line −3. Change "$\int_g$" to "$\int_G$".

Page 663, line 11. Change "$e^{-2\rho\log a}$" to "$e^{-2\rho\log a}F(x)$"

Page 663, line −6. Change "$e^{-\bar\nu+\rho)\log a}$" to "$e^{(\bar\nu-\rho)\log a}$".

Page 685, line12. Change "$\mathfrak{b}_2\cap\mathfrak{b}_1^- = \mathfrak{g}_{-\alpha}$" to "$\mathfrak{b}_2\cap\mathfrak{b}_1^- = \mathfrak{h}\oplus\mathfrak{g}_{-\alpha}$".

Page 686, line 2. Delete the word "germane".

Page 693, line −8. Change "$\mathcal{P}$" to "$\mathcal{P}'$".

Page 698, line −17. Change "$\gamma=\delta(\mathfrak{n}')-\delta(\mathfrak{n}^-)$" to "$\gamma=\delta(\mathfrak{n}')-\delta(\mathfrak{n})$".

Page 699, line 2. Change "$\mathfrak{n}^-$" to "$\mathfrak{n}$" in three places.

Page 699, line 3. Change "$\mathfrak{n}^-$" to "$\mathfrak{n}$".

Page 699, line 4. Change "$\mathfrak{n}^-$" to "$\mathfrak{n}$".

Page 699, line 6. Change "$\mathfrak{n}^-$" to "$\mathfrak{n}$" in two places.

Page 701, line 17. Change "$\mathfrak{b}'=\mathfrak{h}'\oplus\mathfrak{n}'$" to "$\mathfrak{b}'=\mathfrak{h}\oplus\mathfrak{n}'$".

Page 731, line −3. Change "$(\bigwedge^{\mathrm{top}}\mathfrak{b})^*$" to "$(\bigwedge^{\mathrm{top}}\mathfrak{n})^*$".

Page 739, line −2. Change "$\langle\mathrm{Re}\,\nu,\alpha_k\rangle$" to "$\langle\mathrm{Re}\,\nu,\alpha\rangle$".

Page 739, line −1. Change "$\langle\mathrm{Re}\,\nu,\alpha_k\rangle$" to "$\langle\mathrm{Re}\,\nu,\alpha\rangle$".

Page 760, line 5. Change "$X_K'(\xi,\nu)$" to "$X_{L\cap K}'(\xi_L,\nu)$".

Page 760, line 9. Change "$X_K'(\xi,\nu)$" to "$X_{L\cap K}'(\xi_L,\nu)$".

Page 814, lines −3 to −1. Delete the sentence "On this level the topics of this section are not really part of homological algebra, but their applications intersect with it."

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