Corrections to the book "Introduction to representation theory" by Etingof et al, AMS, 2011

January 11, 2021

Gabriel's theorem (Theorem 2.1.2): k is a fixed algebraically closed field.

Before Example 2.2.4: The condition $A \neq 0$ is not needed here, but it is needed in the definition of a simple algebra (Subsection 2.4).

Example 2.3.14: the representations are assumed finite dimensional.

Problem 2.8.6: Q assumed finite, add the relation $\sum_{i\in I} p_i = 1$.

Remark 3.1.3: V is assumed finite dimensional.

Corollary 4.2.4: Any finite dimensional representation...

Subsection 4.4, line 5: To conclude that the eigenvalues of g on V are roots of unity, the group G is assumed finite.

Proof of Theorem 4.6.2: The forms B_1, B_2 are assumed G-invariant.

p.5 of proof of Proposition 5.2.5: $p(x)$ should be replaced with $p(z)$.

Remark 5.8.3: Since the group G is allowed to be infinite, $|G|/|H|$ should be replaced by $(G : H)$ (the index of H in G). The same assumption is needed in Theorem 5.9.1.

Subsections 5.18, 5.19: $\mathbb{C}$ should be replaced with any algebraically closed field k of characteristic zero. Same at the end of Subsection 6.3.

Lemma 5.13.3: $n!$ should be replaced with $\frac{n!}{|P_\lambda||Q_\lambda|}$ in the lemma and its proof. The coefficient of 1 in c_λ is $\frac{1}{|P_\lambda||Q_\lambda|}$.

Corollary 5.15.4: in the numerator of the rightmost expression, replace 1 with $(-1)^\sigma$.

p.131, lines 5-9 should read: "Thus, R is a quotient of a direct sum of representations of the form $S^r(V\otimes V^*)\otimes(\wedge^N V^*)^{\bigotimes s}$, where the group action on V^* in the product $V\otimes V^*$ is trivial. So we may assume that Y is contained in a quotient of a (finite) direct sum of such representations. Thus, Y is contained in a direct sum of representations of the form $V^{\bigotimes n}\otimes(\wedge^N V^*)^{\bigotimes s}$, and we are done."

p.131, line 14, replace $f(gx) = gf(x)$ with $f(xg) = g^{-1}f(x)$.

End of 5.25.3, add: V_{λ_1,λ_2} and W_μ are called principal series representations.

p.141, after line 6, add: These representations are called complementary series representations.

Line 4 of proof of Theorem 5.27.1: (y, a) should be $y(a)$.

Problem 6.1.5: In (a),(b), it is assumed that Q has no self-loops. In (a), the 1/2 in the formula should not be there. The condition $x_i \geq 0$ in (a) should be removed.

Line 4 of Remark 6.4.11: replace s_i with $s_i := s_{\alpha_i}$.

The formula on p.165, line 3 should look like: $\oplus_{j\to i} V_j \to V_i$.

p.170, line 10 of 6.8: $\overline{Q}_n$ should be $\overline{Q}_r$.

Line 1 of proof of Corollary 6.8.2: By the proof of Theorem 6.8.1...

Line 1 of proof of Corollary 6.8.3: Let i be the smallest integer such that...

Example 7.2.2(3): The opposite category of a given category $\mathcal{C}$, denoted by $\mathcal{C}^{\mathrm{op}}$, is...

Definition 7.6.1: it should read ...$\xi_{XY} : \mathrm{Hom}_{\mathcal{D}}(F(X), Y) \to \mathrm{Hom}_{\mathcal{C}}(X, G(Y))$... instead of ...$\xi_{XY} : \mathrm{Hom}_{\mathcal{C}}(F(X), Y) \to \mathrm{Hom}_{\mathcal{D}}(X, G(Y))$...

Proof of Proposition 9.1.1: Starting line 4 of the proof, a should be replaced by $-a$.

p.210, line 4: e_0 should be replaced by e_{k-1}.

If you see more errors, please write to me. Thank you!