

The statement of the Theorem on p. 2654 should be:

Theorem. *Suppose¹ $n > 6$, and let (I, J, K) be a triple as above. Then*

$$H^1(G, C_I \otimes L_J \otimes S_K) \cong F$$

if (I, J, K) is Galois conjugate to $(\{0\}, \emptyset, \emptyset)$ or $(\{1\}, \{0\}, \emptyset)$ and is zero otherwise. The same result holds for \mathbf{G} if I, J and K are allowed to be any three disjoint finite subsets of the natural numbers and Galois conjugation is given by translation by \mathbb{Z} .

(In the published paper, the second triple contained a misprint.)

In the proof of Lemma 3.3, the paragraph labelled (5) should read:

(5). It is safe to assume $r + 1 \in I \cup J$. If $r + 1 \in I$, then $(L_{r+1} \otimes C_{r+1}) \otimes C_{I \setminus \{r, r+1\}} \otimes L_J$ has a filtration with factors (ignoring multiplicities) $S_{r+1} \otimes C_{I \setminus \{r, r+1\}} \otimes L_J$, $C_{I \setminus \{r, r+1\}} \otimes L_J$, $C_{I \setminus \{r, r+1\}} \otimes L_J$ and $C_{r+2} \otimes (C_{I \setminus \{r, r+1\}} \otimes L_J)$. Only the last may have a composition factor S_T (since $|I \cup J| > 2$) and from Lemma 2.3 it follows that this can happen only if $|T| \leq 1$. Now any map from $X(S_T, C_I \otimes L_J)$ into $C_{r+2} \otimes (C_{I \setminus \{r, r+1\}} \otimes L_J)$ must map the socle to zero, so we are done if $\text{Hom}_{FG}(S_T, C_{r+2} \otimes (C_{I \setminus \{r, r+1\}} \otimes L_J))$ is zero, so we consider when this can fail. If $T = \emptyset$ then the above can fail to be zero only if $I = \{r, r + 1, r + 2\}$ and $J = \emptyset$. If $|T| = 1$ then it follows from Lemma 2.5 that the above can fail to be zero only if $I = \{r, r + 1\}$ and $J = \{r + 2\}$. However, in both of these cases we claim that the original space of maps, $\text{Hom}_{FG}(X(S_T, C_I \otimes L_J), L_{r+1} \otimes (C_{I \setminus \{r\}} \otimes L_J))$, is zero. Indeed, by easy computation, we see that $\text{Hom}_{FG}(F, L_{r+1} \otimes C_{\{r+1, r+2\}}, \text{Hom}_{FG}(C_{\{r, r+1, r+2\}}, L_{r+1} \otimes C_{\{r+1, r+2\}}, \text{Hom}_{FG}(S_{r+2}, L_{r+1} \otimes C_{\{r+1, r+2\}})$ and $\text{Hom}_{FG}(C_{\{r, r+1\}} \otimes L_{r+2}, L_{r+1} \otimes C_{\{r+1, r+2\}})$ are all zero.

If $r + 1 \in J$, then $L_{r+1} \otimes (C_{I \setminus \{r\}} \otimes L_J) = (L_{r+1} \otimes L_{r+1}) \otimes (C_{I \setminus \{r\}} \otimes L_{J \setminus \{r+1\}})$ has a filtration with factors $C_{I \setminus \{r\}} \otimes L_{J \setminus \{r+1\}}$, $C_{I \cup \{r+1\} \setminus \{r\}} \otimes L_{J \setminus \{r+1\}}$, $C_{I \setminus \{r\}} \otimes L_J$, (i) $C_{r+2} \otimes (C_{I \cup \{r\} \setminus \{r\}} \otimes L_{J \setminus \{r+1\}})$, (ii) $C_{r+2} \otimes (C_{I \setminus \{r\}} \otimes L_{J \setminus \{r+1\}})$ and (iii) $L_{r+2} \otimes (C_{I \setminus \{r\}} \otimes L_{J \setminus \{r+1\}})$.

The first three are simple and not of the form S_T since $|I \cup J| > 2$. As for the others, it follows from Lemma 2.3 that they cannot have S_T as a composition factor unless $|T| \leq 1$, so we assume this. Moreover, by considering masses, we see that $C_I \otimes L_J$ is not a composition factor, so maps of $X(S_T, C_I \otimes L_J)$ into (i),(ii) and (iii) must annihilate $C_I \otimes L_J$. Now by Lemma 2.5, $S_T \otimes C_{r+2}$ will either be simple or else it will have a simple head isomorphic to either C_{r+2} or L_{r+2} . This implies that there are no nonzero maps from $X(S_T, C_I \otimes L_J)$ to (i) and that there are none to (ii) unless either $(T, I, J) = (\emptyset, \{r, r + 2\}, \{r + 1\})$ or $(T, I, J) = (\{r + 2\}, \{r\}, \{r + 1, r + 2\})$. In both these cases it is easy to check that there are no maps from $X(S_T, C_I \otimes L_J)$ into the original module $L_{r+1} \otimes (C_{I \setminus \{r\}} \otimes L_J)$. In (iii), if $T = \emptyset$, there will be no maps from $X(S_T, C_I \otimes L_J)$ to (iii) unless $I = \{r\}$ and $J = \{r + 1, r + 2\}$, in which case there are no maps into the original module $L_{r+1} \otimes (C_{I \setminus \{r\}} \otimes L_J)$. Suppose finally that $T = \{r + 2\}$. If $r + 2 \in I$, we have

$$\begin{aligned} \text{Hom}_{FG}(S_{r+2}, L_{r+2} \otimes C_{I \setminus \{r\}} \otimes L_{J \setminus \{r+1\}}) \\ \cong \text{Hom}_{FG}(S_{r+2} \otimes C_{r+2}, C_{I \setminus \{r, r+2\}} \otimes L_{J \cup \{r+2\} \setminus \{r+1\}}) \end{aligned}$$

which will be zero unless $I = \{r, r + 2\}$ and $J = \{r + 1\}$, in which case there will be no maps from $X(S_{r+2}, C_{\{r, r+2\}} \otimes L_{\{r+1\}})$ into the original module $L_{r+1} \otimes (C_{r+2} \otimes L_{r+1})$. If $r + 2 \in J$, we note that the only composition factors of $S_{r+2} \otimes L_{r+2}$ which have L_{r+2} as a tensor factor are L_{r+2} and $C_{r+3} \otimes L_{r+2}$. Therefore, there will be nonzero maps of

¹The hypothesis $n > 6$ is used only at the beginning of §4; everywhere else in this paper $n > 2$ is strong enough.

$S_{r+2} \otimes L_{r+2}$ to $C_{I \setminus \{r\}} \otimes L_{J \setminus \{r+1\}}$ only if $(I, J) = (\{r\}, \{r+1, r+2\})$ or $(\{r, r+3\}, \{r+1, r+2\})$. In both cases one can check there are no maps from $X(S_T, C_I \otimes L_J)$ into the original module $L_{r+1} \otimes (C_{r+2} \otimes L_{r+1})$.