

$N = 274 = 2 \cdot 137$

By the Ibukiyama-Kitayama dimension formula,  
 $\dim(S_4(K(274))) = 191$

By the Skoruppa-Zagier dimension formula and Jacobi restriction,  
the lift dimension of  $S_4(K(274))^+$  is 52  
the nonlift dimension of  $S_4(K(274))^+$  is heuristically 112  
 $\dim(S_4(K(274))^+)$  thus is heuristically 164  
 $\dim(S_4(K(274))^-)$  is heuristically 27

$\dim(J_{\{2,274\}}^{\{\text{cusp}\}}) = 7$  (Skoruppa-Zagier), so need to span to within 6 dimensions

$q = 5$  for TraceDown

After TD( $\text{Grit}(J_{\{4,1370\}}^{\{\text{cusp}\}})$ ) and  $(\text{Grit}(J_{\{2,274\}}^{\{\text{cusp}\}}))^2$ ,  
spanned rank in  $S_4(K(274))^+$  is 162  
spanned rank in  $S_4(K(274))^-$  is 0

Hecke operators applied:  $\{\{2, 2\}, \{2, 2\}, \{2, 1\}\}$   
After Hecke spreading,  
spanned rank in  $S_4(K(274))^-$  is 19

After Borcherds products,  
spanned rank in  $S_4(K(274))^-$  is 24

Final spanned rank in  $S_4(K(274))^+$  is 162

Final spanned rank in  $S_4(K(274))^-$  is 24

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 $S_2(K(274))^+$  is determined by Jacobi restriction and the  $H4Ndl(3,+)$  test  
( $\dim(H_4(274,3,1))^+ \leq 5$  and this is less than  $\dim(J_{\{2,274\}}^{\{\text{cusp}\}})+1 = 8$ )  
 $S_2(K(274))^- = 0$  by Jacobi restriction and the  $H4Ndl(1,-)$  test  
( $\dim(H_4(274,1,1))^- \leq 6$  and this is less than  $\dim(J_{\{2,274\}}^{\{\text{cusp}\}}) = 7$ )

So  $S_2(K(274)) = \text{Grit}(J_{\{2,274\}}^{\{\text{cusp}\}})$  (dimension 7)