

$$N = 273 = 3 \cdot 7 \cdot 13$$

By the Ibukiyama-Kitayama dimension formula,
 $\dim(S_4(K(273))) = 160$

By the Skoruppa-Zagier dimension formula and Jacobi restriction,
the lift dimension of $S_4(K(273))^+$ is 48
the nonlift dimension of $S_4(K(273))^+$ is heuristically 93
 $\dim(S_4(K(273))^+)$ thus is heuristically 141
 $\dim(S_4(K(273))^-)$ is heuristically 19

$\dim(J_{\{2,273\}}^{\{\text{cusp}\}}) = 6$ (Skoruppa-Zagier), so need to span to within 5 dimensions

$q = 5$ for TraceDown

After TD($\text{Grit}(J_{\{4,1365\}}^{\{\text{cusp}\}})$) and $(\text{Grit}(J_{\{2,273\}}^{\{\text{cusp}\}}))^2$,
spanned rank in $S_4(K(273))^+$ is 141
spanned rank in $S_4(K(273))^-$ is 0

Hecke operators applied: $\{\{3, 2\}\}$

After Hecke spreading,
spanned rank in $S_4(K(273))^-$ is 10

After Borcherds products,
spanned rank in $S_4(K(273))^-$ is 17

Final spanned rank in $S_4(K(273))^+$ is 141

Final spanned rank in $S_4(K(273))^-$ is 17

$S_2(K(273))^+$ is determined by Jacobi restriction and the $H4Ndl(3,+)$ test
($\dim(H_4(273,3,1))^+ \leq 2$ and this is less than $\dim(J_{\{2,273\}}^{\{\text{cusp}\}})+1 = 7$)
 $S_2(K(273))^- = 0$ by Jacobi restriction and the $H4Ndl(1,-)$ test
($\dim(H_4(273,1,1))^- \leq 2$ and this is less than $\dim(J_{\{2,273\}}^{\{\text{cusp}\}}) = 6$)

So $S_2(K(273)) = \text{Grit}(J_{\{2,273\}}^{\{\text{cusp}\}})$ (dimension 6)