

$$N = 69 = 3 \cdot 23$$

By the Ibukiyama-Kitayama dimension formula,
 $\dim(S_4(K(69))) = 14$

By the Skoruppa-Zagier dimension formula and Jacobi restriction,
the lift dimension of $S_4(K(69))^+$ is 10
the nonlift dimension of $S_4(K(69))^+$ is heuristically 4
 $\dim(S_4(K(69))^+)$ thus is heuristically 14
 $\dim(S_4(K(69))^-)$ is heuristically 0

The heuristic dimensions are correct by the spanning results to follow

$\dim(J_{\{2,69\}}^{\{\text{cusp}\}}) = 0$ (Skoruppa-Zagier), so need to span completely

$q = 5$ for TraceDown

After $\text{TD}(\text{Grit}(J_{\{4,345\}}^{\{\text{cusp}\}}))$ and $(\text{Grit}(J_{\{2,69\}}^{\{\text{cusp}\}}))^2$,
spanned rank in $S_4(K(69))^+$ is 14
spanned rank in $S_4(K(69))^-$ is 0

Final spanned rank in $S_4(K(69))^+$ is 14

Final spanned rank in $S_4(K(69))^-$ is 0

 $S_2(K(69))$ is determined by Jacobi restriction and the $H4Ndd(1,+)$ test
($H_4(69,1,1)^+ = 0$)

So $S_2(K(69)) = \text{Grit}(J_{\{2,69\}}^{\{\text{cusp}\}})$ (dimension 0)