

$$N = 91 = 7 \cdot 13$$

By the Ibukiyama-Kitayama dimension formula,
 $\dim(S_4(K(91))) = 26$

By the Skoruppa-Zagier dimension formula and Jacobi restriction,
the lift dimension of $S_4(K(91))^+$ is 16
the nonlift dimension of $S_4(K(91))^+$ is heuristically 10
 $\dim(S_4(K(91))^+)$ thus is heuristically 26
 $\dim(S_4(K(91))^-)$ is heuristically 0

The heuristic dimensions are correct by the spanning results to follow

$\dim(J_{\{2,91\}}^{\{\text{cusp}\}}) = 2$ (Skoruppa-Zagier), so need to span to within 1 dimension

$q = 5$ for TraceDown

After TD($\text{Grit}(J_{\{4,455\}}^{\{\text{cusp}\}})$) and $(\text{Grit}(J_{\{2,91\}}^{\{\text{cusp}\}}))^2$,
spanned rank in $S_4(K(91))^+$ is 24
spanned rank in $S_4(K(91))^-$ is 0

Hecke operators applied: $\{\{2, 1\}\}, \{\{3, 1\}\}$

After Hecke spreading,
spanned rank in $S_4(K(91))^+$ is 26

Final spanned rank in $S_4(K(91))^+$ is 26

Final spanned rank in $S_4(K(91))^-$ is 0

$S_2(K(91))$ is determined by Jacobi restriction and the $H4Ndd(2,+)$ test
 $(H_4(91,2,2))^+ = 0$

So $S_2(K(91)) = \text{Grit}(J_{\{2,91\}}^{\{\text{cusp}\}})$ (dimension 2)