

$$N = 219 = 3 \cdot 73$$

By the Ibukiyama-Kitayama dimension formula,
 $\dim(S_4(K(219))) = 111$

By the Skoruppa-Zagier dimension formula and Jacobi restriction,
the lift dimension of $S_4(K(219))^+$ is 40
the nonlift dimension of $S_4(K(219))^+$ is heuristically 58
 $\dim(S_4(K(219))^+)$ thus is heuristically 98
 $\dim(S_4(K(219))^-)$ is heuristically 13

The heuristic dimensions are correct by the spanning results to follow

$\dim(J_{\{2,219\}}^{\{\text{cusp}\}}) = 5$ (Skoruppa-Zagier), so need to span to within 4 dimensions

$q = 5$ for TraceDown

After TD($\text{Grit}(J_{\{4,1095\}}^{\{\text{cusp}\}})$) and $(\text{Grit}(J_{\{2,219\}}^{\{\text{cusp}\}}))^2$,
spanned rank in $S_4(K(219))^+$ is 98
spanned rank in $S_4(K(219))^-$ is 0

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

After Hecke spreading,
spanned rank in $S_4(K(219))^-$ is 7

After Borcherds products,
spanned rank in $S_4(K(219))^-$ is 13

Final spanned rank in $S_4(K(219))^+$ is 98

Final spanned rank in $S_4(K(219))^-$ is 13

$S_2(K(219))$ is determined by Jacobi restriction and the $H4Ndd(2,+)$ test
($H_4(219,2,2)^+ = 0$)

So $S_2(K(219)) = \text{Grit}(J_{\{2,219\}}^{\{\text{cusp}\}})$ (dimension 5)