

$$N = 185 = 5 \cdot 37$$

By the Ibukiyama-Kitayama dimension formula,
 $\dim(S_4(K(185))) = 78$

By the Skoruppa-Zagier dimension formula and Jacobi restriction,
the lift dimension of $S_4(K(185))^+$ is 33
the nonlift dimension of $S_4(K(185))^+$ is heuristically 39
 $\dim(S_4(K(185))^+)$ thus is heuristically 72
 $\dim(S_4(K(185))^-)$ is heuristically 6

The heuristic dimensions are correct by the spanning results to follow

$\dim(J_{\{2,185\}}^{\{\text{cusp}\}}) = 4$ (Skoruppa-Zagier), so need to span to within 3 dimensions

$q = 3$ for TraceDown

After TD($\text{Grit}(J_{\{4,555\}}^{\{\text{cusp}\}})$) and $(\text{Grit}(J_{\{2,185\}}^{\{\text{cusp}\}}))^2$,
spanned rank in $S_4(K(185))^+$ is 72
spanned rank in $S_4(K(185))^-$ is 0

After Borcherds products,
spanned rank in $S_4(K(185))^-$ is 6

Final spanned rank in $S_4(K(185))^+$ is 72

Final spanned rank in $S_4(K(185))^-$ is 6

$S_2(K(185))$ is determined by Jacobi restriction and the $H4Ndd(2,+)$ test
($H_4(185,2,2)^+ = 0$)

So $S_2(K(185)) = \text{Grit}(J_{\{2,185\}}^{\{\text{cusp}\}})$ (dimension 4)