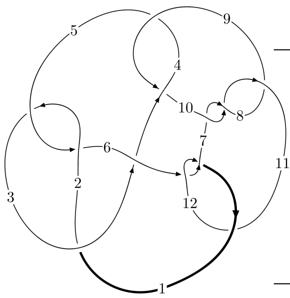
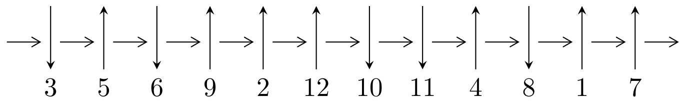
$12a_{0030}$ $(K12a_{0030})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

$$4,9 \xrightarrow[c_4]{} 2,5 \xrightarrow[c_2]{} 3 \xrightarrow[c_5]{} 6 \xrightarrow[c_9]{} 10 \xrightarrow[c_1]{} 1,11 \xrightarrow[c_8]{} 8 \xrightarrow[c_7]{} 7 \xrightarrow[c_{12}]{} 12 \longrightarrow\!\!\!\!\!\rightarrow c_3, c_6, c_{10}, c_{11}$$

Ideals for irreducible components[2] of $X_{\mathbf{par}}$

$$\begin{aligned}
I_1^u = \langle & 2.97380 \times 10^{162} u^{76} - 7.99163 \times 10^{162} u^{75} + \cdots + 1.45795 \times 10^{166} d - 5.67098 \times 10^{165}, \\
& 4.24191 \times 10^{162} u^{76} - 1.61625 \times 10^{163} u^{75} + \cdots + 1.45795 \times 10^{166} c + 2.78196 \times 10^{165}, \\
& 6.76436 \times 10^{182} u^{76} - 1.29212 \times 10^{183} u^{75} + \cdots + 1.08760 \times 10^{185} b - 1.19824 \times 10^{185}, \\
& 1.65541 \times 10^{183} u^{76} - 4.27644 \times 10^{183} u^{75} + \cdots + 2.17520 \times 10^{185} a + 1.69038 \times 10^{186}, \\
& u^{77} - 2u^{76} + \cdots - 2560u^2 - 512 \rangle \\
I_2^u = \langle & -c^2 u + d - c,\ u^3 c + c^3 + u^2 c - u^3 + cu - u + 1,\ -u^2 + b + u - 1,\ u^3 - u^2 + a + u - 1,\ u^4 + u^2 - u + 1 \rangle \\
I_3^u = \langle & -c^2 u + d - c,\ -2u^5 c - u^4 c - u^5 - 3u^3 c - u^4 + c^3 - 2u^2 c - 2u^3 - 2cu - 2u^2 - 2c - 2u - 2, \\
& -2u^5 - u^4 - 3u^3 - 2u^2 + b - 3u - 2,\ -u^4 - u^2 + a - u - 1,\ u^6 + u^5 + 2u^4 + 2u^3 + 2u^2 + 2u + 1 \rangle
\end{aligned}$$

$$\begin{aligned}
I_1^v &= \langle a,\ d,\ c - v,\ b - v,\ v^2 - v + 1 \rangle \\
I_2^v &= \langle a,\ d + v + 1,\ av + c + 1,\ b + v,\ v^2 + v + 1 \rangle \\
I_3^v &= \langle c,\ d - 1,\ b,\ a - 1,\ v - 1 \rangle \\
I_4^v &= \langle a,\ db + da - cb - d + b - 1,\ a^2 d - cba - da + cb + ba + d - c - a + 1,\ dv - 1,\ cv + ba - bv - b - a, \\
&\quad\ b^2 - b + 1 \rangle
\end{aligned}$$

* 6 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 112 representations.
* 1 irreducible components of $\dim_{\mathbb{C}} = 1$

[1] The image of knot diagram is generated by the software "**Draw programme**" developed by Andrew Bartholomew(`http://www.layer8.co.uk/maths/draw/index.htm#Running-draw`), where we modified some parts for our purpose(`https://github.com/CATsTAILs/LinksPainter`).

[2] All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

I.

$\boldsymbol{I_1^u = \langle 2.97\times10^{162}u^{76} - 7.99\times10^{162}u^{75} + \cdots + 1.46\times10^{166}d - 5.67\times10^{165},\ 4.24\times10^{162}u^{76} - 1.62\times10^{163}u^{75} + \cdots + 1.46\times10^{166}c + 2.78\times10^{165},\ 6.76\times10^{182}u^{76} - 1.29\times10^{183}u^{75} + \cdots + 1.09\times10^{185}b - 1.20\times10^{185},\ 1.66\times10^{183}u^{76} - 4.28\times10^{183}u^{75} + \cdots + 2.18\times10^{185}a + 1.69\times10^{186},\ u^{77} - 2u^{76} + \cdots - 2560u^2 - 512\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_9 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-0.00761038u^{76} + 0.0196600u^{75} + \cdots + 4.69111u - 7.77114\\-0.00621954u^{76} + 0.0118805u^{75} + \cdots + 6.90325u + 1.10173\end{pmatrix}$$
$$a_5 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-0.00903125u^{76} + 0.0210962u^{75} + \cdots + 7.69784u - 4.39652\\-0.00575546u^{76} + 0.0105565u^{75} + \cdots + 7.63073u + 1.82138\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-0.0108390u^{76} + 0.0188168u^{75} + \cdots + 14.5481u - 0.522142\\0.00170046u^{76} - 0.00573767u^{75} + \cdots - 1.46268u + 2.50020\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}u\\u\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-0.0125394u^{76} + 0.0245545u^{75} + \cdots + 16.0108u - 3.02234\\-0.00622485u^{76} + 0.0135037u^{75} + \cdots + 7.88286u - 2.23172\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-0.000290951u^{76} + 0.00110858u^{75} + \cdots + 1.36870u - 0.190813\\-0.000203972u^{76} + 0.000548142u^{75} + \cdots + 0.515526u + 0.388970\end{pmatrix}$$
$$a_8 = \begin{pmatrix}0.0000869789u^{76} - 0.000560439u^{75} + \cdots - 0.853173u + 0.579783\\-0.000203972u^{76} + 0.000548142u^{75} + \cdots + 0.515526u + 0.388970\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-0.000208604u^{76} - 0.0000329385u^{75} + \cdots - 1.00214u + 0.849444\\-0.000499554u^{76} + 0.00107564u^{75} + \cdots + 0.366559u + 0.658630\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}-0.0150036u^{76} + 0.0284788u^{75} + \cdots + 20.0911u - 2.34221\\-0.00485367u^{76} + 0.0102965u^{75} + \cdots + 6.71768u - 1.05079\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 0.0221138u^{76} - 0.0478032u^{75} + \cdots - 21.6023u - 0.388088$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{77} + 36u^{76} + \cdots + 216u - 16$
c_2, c_5	$u^{77} + 2u^{76} + \cdots + 27u^2 - 4$
c_3	$u^{77} - 2u^{76} + \cdots + 351912u - 66564$
c_4, c_9	$u^{77} - 2u^{76} + \cdots - 2560u^2 - 512$
c_6, c_{12}	$u^{77} + 8u^{76} + \cdots - 72u - 16$
c_7, c_8, c_{10}	$u^{77} - 8u^{76} + \cdots - 72u - 16$
c_{11}	$u^{77} - 34u^{76} + \cdots + 1568u - 256$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{77} + 12y^{76} + \cdots + 84256y - 256$
c_2, c_5	$y^{77} + 36y^{76} + \cdots + 216y - 16$
c_3	$y^{77} - 12y^{76} + \cdots + 120020616504y - 4430766096$
c_4, c_9	$y^{77} + 30y^{76} + \cdots - 2621440y - 262144$
c_6, c_{12}	$y^{77} - 34y^{76} + \cdots + 1568y - 256$
c_7, c_8, c_{10}	$y^{77} - 74y^{76} + \cdots + 7712y - 256$
c_{11}	$y^{77} + 26y^{76} + \cdots + 3416576y - 65536$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.508886 + 0.845592I$ $a = -2.01821 + 2.48278I$ $b = 0.67033 + 1.82257I$ $c = 0.464983 + 0.518986I$ $d = 0.029827 + 0.719662I$	$2.40889 + 4.27390I$	$3.74115 - 6.44221I$
$u = 0.508886 - 0.845592I$ $a = -2.01821 - 2.48278I$ $b = 0.67033 - 1.82257I$ $c = 0.464983 - 0.518986I$ $d = 0.029827 - 0.719662I$	$2.40889 - 4.27390I$	$3.74115 + 6.44221I$
$u = -0.848496 + 0.585068I$ $a = 0.774643 + 0.166861I$ $b = 0.208609 + 0.303408I$ $c = -0.508850 + 0.474076I$ $d = -0.255576 + 0.903445I$	$3.78378 + 2.11500I$	$7.65464 - 1.99007I$
$u = -0.848496 - 0.585068I$ $a = 0.774643 - 0.166861I$ $b = 0.208609 - 0.303408I$ $c = -0.508850 - 0.474076I$ $d = -0.255576 - 0.903445I$	$3.78378 - 2.11500I$	$7.65464 + 1.99007I$
$u = -0.990280 + 0.319237I$ $a = 0.787830 + 0.083627I$ $b = -0.082157 + 0.217726I$ $c = 1.249660 + 0.250247I$ $d = -0.434460 + 0.109424I$	$-2.98745 + 0.86657I$	0
$u = -0.990280 - 0.319237I$ $a = 0.787830 - 0.083627I$ $b = -0.082157 - 0.217726I$ $c = 1.249660 - 0.250247I$ $d = -0.434460 - 0.109424I$	$-2.98745 - 0.86657I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.617221+0.733532I$ $a=\quad 0.462356-0.972183I$ $b=\quad 0.323373-0.206230I$ $c=-0.468418+0.489504I$ $d=-0.119564+0.757735I$	$4.09446+0.35704I$	$8.04104+0.70386I$
$u=-0.617221-0.733532I$ $a=\quad 0.462356+0.972183I$ $b=\quad 0.323373+0.206230I$ $c=-0.468418-0.489504I$ $d=-0.119564-0.757735I$	$4.09446-0.35704I$	$8.04104-0.70386I$
$u=\quad 0.517431+0.792256I$ $a=\quad 0.648790+0.421877I$ $b=\quad 1.21086-1.35430I$ $c=\quad 0.457643+0.510225I$ $d=\quad 0.061325+0.711547I$	$2.57405-0.08416I$	$4.54592-2.74373I$
$u=\quad 0.517431-0.792256I$ $a=\quad 0.648790-0.421877I$ $b=\quad 1.21086+1.35430I$ $c=\quad 0.457643-0.510225I$ $d=\quad 0.061325-0.711547I$	$2.57405+0.08416I$	$4.54592+2.74373I$
$u=-0.082487+0.936352I$ $a=\quad 0.533253-0.084017I$ $b=-0.1191060-0.0483275I$ $c=\quad 0.588786+0.717292I$ $d=-0.188271+0.490462I$	$-1.72016+1.41215I$	$-1.65188-3.77223I$
$u=-0.082487-0.936352I$ $a=\quad 0.533253+0.084017I$ $b=-0.1191060+0.0483275I$ $c=\quad 0.588786-0.717292I$ $d=-0.188271-0.490462I$	$-1.72016-1.41215I$	$-1.65188+3.77223I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.582500 + 0.889546I$ $a = 0.720191 + 0.253876I$ $b = 0.783297 + 0.240221I$ $c = -0.478527 + 0.513127I$ $d = -0.021694 + 0.768666I$	$3.62010 - 5.07823I$	$6.10660 + 7.37918I$
$u = -0.582500 - 0.889546I$ $a = 0.720191 - 0.253876I$ $b = 0.783297 - 0.240221I$ $c = -0.478527 - 0.513127I$ $d = -0.021694 - 0.768666I$	$3.62010 + 5.07823I$	$6.10660 - 7.37918I$
$u = 0.228301 + 1.040040I$ $a = 0.647193 + 0.370147I$ $b = 1.55007 - 0.83492I$ $c = 0.171170 - 1.253130I$ $d = 0.26552 - 2.95382I$	$-3.92825 - 1.69884I$	$-4.65730 + 2.32962I$
$u = 0.228301 - 1.040040I$ $a = 0.647193 - 0.370147I$ $b = 1.55007 + 0.83492I$ $c = 0.171170 + 1.253130I$ $d = 0.26552 + 2.95382I$	$-3.92825 + 1.69884I$	$-4.65730 - 2.32962I$
$u = 0.782003 + 0.468875I$ $a = -0.09272 + 1.85079I$ $b = 0.738345 - 0.001201I$ $c = -1.262590 + 0.477339I$ $d = 0.371007 + 0.175352I$	$0.65497 - 3.51390I$	$3.54011 + 4.44478I$
$u = 0.782003 - 0.468875I$ $a = -0.09272 - 1.85079I$ $b = 0.738345 + 0.001201I$ $c = -1.262590 - 0.477339I$ $d = 0.371007 - 0.175352I$	$0.65497 + 3.51390I$	$3.54011 - 4.44478I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.374962 + 1.039940I$ $a = 0.686555 + 0.288879I$ $b = 1.169710 + 0.084807I$ $c = -0.259210 - 1.195820I$ $d = -0.39291 - 2.84551I$	$-3.38837 - 3.78470I$	0
$u = -0.374962 - 1.039940I$ $a = 0.686555 - 0.288879I$ $b = 1.169710 - 0.084807I$ $c = -0.259210 + 1.195820I$ $d = -0.39291 + 2.84551I$	$-3.38837 + 3.78470I$	0
$u = 0.965284 + 0.548957I$ $a = 0.625184 + 0.492951I$ $b = 0.68045 - 2.05306I$ $c = 0.522160 + 0.485983I$ $d = 0.278757 + 0.995907I$	$1.81197 - 6.85619I$	0
$u = 0.965284 - 0.548957I$ $a = 0.625184 - 0.492951I$ $b = 0.68045 + 2.05306I$ $c = 0.522160 - 0.485983I$ $d = 0.278757 - 0.995907I$	$1.81197 + 6.85619I$	0
$u = 0.288832 + 1.092220I$ $a = -0.83997 + 2.42037I$ $b = 0.11827 + 2.10829I$ $c = -0.707441 + 0.634880I$ $d = 0.301812 + 0.481810I$	$-4.40655 + 2.61636I$	0
$u = 0.288832 - 1.092220I$ $a = -0.83997 - 2.42037I$ $b = 0.11827 - 2.10829I$ $c = -0.707441 - 0.634880I$ $d = 0.301812 - 0.481810I$	$-4.40655 - 2.61636I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.815552 + 0.276755I$ $a = 0.799645 - 0.625291I$ $b = -0.468019 + 0.989394I$ $c = 0.581077 + 0.429556I$ $d = 0.567805 + 0.879067I$	$-0.065597 - 0.205341I$	$1.21551 + 1.86968I$
$u = 0.815552 - 0.276755I$ $a = 0.799645 + 0.625291I$ $b = -0.468019 - 0.989394I$ $c = 0.581077 - 0.429556I$ $d = 0.567805 - 0.879067I$	$-0.065597 + 0.205341I$	$1.21551 - 1.86968I$
$u = -0.008067 + 1.164640I$ $a = -0.09279 - 2.27307I$ $b = -0.47312 - 1.95892I$ $c = -0.589470 + 0.601192I$ $d = 0.236103 + 0.590654I$	$-4.97078 - 4.99360I$	0
$u = -0.008067 - 1.164640I$ $a = -0.09279 + 2.27307I$ $b = -0.47312 + 1.95892I$ $c = -0.589470 - 0.601192I$ $d = 0.236103 - 0.590654I$	$-4.97078 + 4.99360I$	0
$u = 1.177360 + 0.140655I$ $a = 0.654058 - 0.644673I$ $b = -0.76712 + 1.79650I$ $c = -1.186110 + 0.084828I$ $d = 0.490100 + 0.044776I$	$-6.72367 + 2.38646I$	0
$u = 1.177360 - 0.140655I$ $a = 0.654058 + 0.644673I$ $b = -0.76712 - 1.79650I$ $c = -1.186110 - 0.084828I$ $d = 0.490100 - 0.044776I$	$-6.72367 - 2.38646I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.516220 + 1.088150I$ $a = 0.619518 - 0.395918I$ $b = 1.72011 + 1.31893I$ $c = -0.298515 - 1.111320I$ $d = -0.42895 - 2.70075I$	$-2.28765 - 3.11487I$	0
$u = -0.516220 - 1.088150I$ $a = 0.619518 + 0.395918I$ $b = 1.72011 - 1.31893I$ $c = -0.298515 + 1.111320I$ $d = -0.42895 + 2.70075I$	$-2.28765 + 3.11487I$	0
$u = 1.143240 + 0.423905I$ $a = 0.611807 + 0.526230I$ $b = 0.33407 - 2.31050I$ $c = -1.127630 + 0.240108I$ $d = 0.489699 + 0.135615I$	$-5.54743 - 5.38085I$	0
$u = 1.143240 - 0.423905I$ $a = 0.611807 - 0.526230I$ $b = 0.33407 + 2.31050I$ $c = -1.127630 - 0.240108I$ $d = 0.489699 - 0.135615I$	$-5.54743 + 5.38085I$	0
$u = 1.079500 + 0.575143I$ $a = 0.737296 - 0.124322I$ $b = 0.002970 - 0.490365I$ $c = -1.087450 + 0.321582I$ $d = 0.479725 + 0.187227I$	$-1.00971 - 5.65602I$	0
$u = 1.079500 - 0.575143I$ $a = 0.737296 + 0.124322I$ $b = 0.002970 + 0.490365I$ $c = -1.087450 - 0.321582I$ $d = 0.479725 - 0.187227I$	$-1.00971 + 5.65602I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.163010 + 0.411297I$ $a = 0.671551 + 0.736386I$ $b = -1.25901 - 1.37221I$ $c = 1.123810 + 0.227703I$ $d = -0.495195 + 0.130609I$	$-5.58247 + 2.79509I$	0
$u = -1.163010 - 0.411297I$ $a = 0.671551 - 0.736386I$ $b = -1.25901 + 1.37221I$ $c = 1.123810 - 0.227703I$ $d = -0.495195 - 0.130609I$	$-5.58247 - 2.79509I$	0
$u = 0.530613 + 1.137340I$ $a = 0.59455 - 1.53864I$ $b = -1.44703 - 1.12686I$ $c = 0.507572 + 0.524795I$ $d = -0.107774 + 0.787252I$	$-2.68982 + 5.10175I$	0
$u = 0.530613 - 1.137340I$ $a = 0.59455 + 1.53864I$ $b = -1.44703 + 1.12686I$ $c = 0.507572 - 0.524795I$ $d = -0.107774 - 0.787252I$	$-2.68982 - 5.10175I$	0
$u = 0.601554 + 1.104580I$ $a = 0.680392 - 0.250043I$ $b = 1.056620 - 0.465664I$ $c = 0.317906 - 1.068470I$ $d = 0.44234 - 2.62651I$	$-1.29562 + 8.75795I$	0
$u = 0.601554 - 1.104580I$ $a = 0.680392 + 0.250043I$ $b = 1.056620 + 0.465664I$ $c = 0.317906 + 1.068470I$ $d = 0.44234 + 2.62651I$	$-1.29562 - 8.75795I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.666542 + 1.084300I$ $a = 0.118135 - 0.542591I$ $b = 0.071442 - 0.585941I$ $c = -0.500654 + 0.512356I$ $d = 0.063520 + 0.841456I$	$2.21245 - 7.79054I$	0
$u = -0.666542 - 1.084300I$ $a = 0.118135 + 0.542591I$ $b = 0.071442 + 0.585941I$ $c = -0.500654 - 0.512356I$ $d = 0.063520 - 0.841456I$	$2.21245 + 7.79054I$	0
$u = -0.620529 + 0.325559I$ $a = -5.14562 - 0.27928I$ $b = 0.95424 - 1.08066I$ $c = 1.53525 + 0.58015I$ $d = -0.298411 + 0.132539I$	$-0.115678 - 1.341920I$	$2.41782 + 1.83708I$
$u = -0.620529 - 0.325559I$ $a = -5.14562 + 0.27928I$ $b = 0.95424 + 1.08066I$ $c = 1.53525 - 0.58015I$ $d = -0.298411 - 0.132539I$	$-0.115678 + 1.341920I$	$2.41782 - 1.83708I$
$u = -1.161000 + 0.625559I$ $a = 0.593536 - 0.499633I$ $b = 0.72499 + 2.47316I$ $c = 1.043590 + 0.300928I$ $d = -0.508606 + 0.196354I$	$-3.39852 + 10.69180I$	0
$u = -1.161000 - 0.625559I$ $a = 0.593536 + 0.499633I$ $b = 0.72499 - 2.47316I$ $c = 1.043590 - 0.300928I$ $d = -0.508606 - 0.196354I$	$-3.39852 - 10.69180I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.423653 + 0.527399I$ $a = 1.64700 - 0.10554I$ $b = -0.013996 + 0.147207I$ $c = 1.19260 + 0.97739I$ $d = -0.234755 + 0.236030I$	$-1.92120 + 0.81846I$	$-4.58107 + 0.87681I$
$u = -0.423653 - 0.527399I$ $a = 1.64700 + 0.10554I$ $b = -0.013996 - 0.147207I$ $c = 1.19260 - 0.97739I$ $d = -0.234755 - 0.236030I$	$-1.92120 - 0.81846I$	$-4.58107 - 0.87681I$
$u = -0.662834 + 0.003253I$ $a = 0.744320 - 0.519698I$ $b = 0.094140 + 1.188930I$ $c = -0.875349 + 0.262723I$ $d = -1.33599 + 0.56986I$	$-0.58945 + 2.77011I$	$1.22579 - 6.61866I$
$u = -0.662834 - 0.003253I$ $a = 0.744320 + 0.519698I$ $b = 0.094140 - 1.188930I$ $c = -0.875349 - 0.262723I$ $d = -1.33599 - 0.56986I$	$-0.58945 - 2.77011I$	$1.22579 + 6.61866I$
$u = 0.703559 + 1.143570I$ $a = -1.41542 + 1.63566I$ $b = 0.89414 + 2.47672I$ $c = 0.504693 + 0.509367I$ $d = -0.086608 + 0.865680I$	$-0.07596 + 12.98220I$	0
$u = 0.703559 - 1.143570I$ $a = -1.41542 - 1.63566I$ $b = 0.89414 - 2.47672I$ $c = 0.504693 - 0.509367I$ $d = -0.086608 - 0.865680I$	$-0.07596 - 12.98220I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.624723 + 1.201920I$ $a = 0.091608 - 0.434620I$ $b = -0.088537 - 0.634115I$ $c = -0.285261 - 1.033440I$ $d = -0.37754 - 2.58761I$	$-5.70918 - 6.67323I$	0
$u = -0.624723 - 1.201920I$ $a = 0.091608 + 0.434620I$ $b = -0.088537 + 0.634115I$ $c = -0.285261 + 1.033440I$ $d = -0.37754 + 2.58761I$	$-5.70918 + 6.67323I$	0
$u = 0.127875 + 0.624992I$ $a = 2.72583 - 3.94484I$ $b = 0.006337 - 0.990934I$ $c = 0.253619 + 0.626692I$ $d = 0.012949 + 0.462081I$	$0.93270 - 1.56780I$	$-1.99036 - 0.81001I$
$u = 0.127875 - 0.624992I$ $a = 2.72583 + 3.94484I$ $b = 0.006337 + 0.990934I$ $c = 0.253619 - 0.626692I$ $d = 0.012949 - 0.462081I$	$0.93270 + 1.56780I$	$-1.99036 + 0.81001I$
$u = -0.115044 + 1.357830I$ $a = 0.180939 - 0.072623I$ $b = -0.487158 - 0.132207I$ $c = -0.052504 - 1.096260I$ $d = -0.07087 - 2.73758I$	$-9.14335 - 2.92995I$	0
$u = -0.115044 - 1.357830I$ $a = 0.180939 + 0.072623I$ $b = -0.487158 + 0.132207I$ $c = -0.052504 + 1.096260I$ $d = -0.07087 + 2.73758I$	$-9.14335 + 2.92995I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.518606 + 1.307430I$ $a = 0.38567 - 1.50647I$ $b = -1.70593 - 1.48615I$ $c = 0.220862 - 1.037960I$ $d = 0.28688 - 2.62053I$	$-10.68990 + 3.50430I$	0
$u = 0.518606 - 1.307430I$ $a = 0.38567 + 1.50647I$ $b = -1.70593 + 1.48615I$ $c = 0.220862 + 1.037960I$ $d = 0.28688 + 2.62053I$	$-10.68990 - 3.50430I$	0
$u = 0.758435 + 1.184640I$ $a = 0.005474 + 0.499286I$ $b = 0.039612 + 0.773723I$ $c = 0.320071 - 0.988013I$ $d = 0.40665 - 2.50274I$	$-2.97939 + 12.30500I$	0
$u = 0.758435 - 1.184640I$ $a = 0.005474 - 0.499286I$ $b = 0.039612 - 0.773723I$ $c = 0.320071 + 0.988013I$ $d = 0.40665 + 2.50274I$	$-2.97939 - 12.30500I$	0
$u = 0.69467 + 1.24791I$ $a = -1.24041 + 1.58034I$ $b = 0.82378 + 2.69229I$ $c = 0.285505 - 0.998245I$ $d = 0.36121 - 2.53602I$	$-8.2281 + 11.9338I$	0
$u = 0.69467 - 1.24791I$ $a = -1.24041 - 1.58034I$ $b = 0.82378 - 2.69229I$ $c = 0.285505 + 0.998245I$ $d = 0.36121 + 2.53602I$	$-8.2281 - 11.9338I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.043030 + 0.567805I$ $a = 0.727863 - 0.383427I$ $b = 0.792925 + 0.668517I$ $c = 0.091032 + 0.642073I$ $d = 0.007274 + 0.417726I$	$0.91327 + 2.30980I$	$-2.35018 - 5.72620I$
$u = 0.043030 - 0.567805I$ $a = 0.727863 + 0.383427I$ $b = 0.792925 - 0.668517I$ $c = 0.091032 - 0.642073I$ $d = 0.007274 - 0.417726I$	$0.91327 - 2.30980I$	$-2.35018 + 5.72620I$
$u = -0.68480 + 1.26233I$ $a = 0.46647 + 1.35220I$ $b = -1.97021 + 1.11081I$ $c = -0.278588 - 0.998411I$ $d = -0.35134 - 2.53971I$	$-8.38263 - 9.37788I$	0
$u = -0.68480 - 1.26233I$ $a = 0.46647 - 1.35220I$ $b = -1.97021 - 1.11081I$ $c = -0.278588 + 0.998411I$ $d = -0.35134 + 2.53971I$	$-8.38263 + 9.37788I$	0
$u = -0.80648 + 1.20827I$ $a = -1.35815 - 1.43415I$ $b = 1.08361 - 2.65894I$ $c = -0.319340 - 0.967077I$ $d = -0.39362 - 2.47200I$	$-5.3240 - 17.7550I$	0
$u = -0.80648 - 1.20827I$ $a = -1.35815 + 1.43415I$ $b = 1.08361 + 2.65894I$ $c = -0.319340 + 0.967077I$ $d = -0.39362 + 2.47200I$	$-5.3240 + 17.7550I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.00564+1.45291I$ $a=-0.21439-1.77515I$ $b=-0.81882-2.53575I$ $c=-0.002269-1.059790I$ $d=-0.00292-2.69163I$	$-13.06970-1.34685I$	0
$u=-0.00564-1.45291I$ $a=-0.21439+1.77515I$ $b=-0.81882+2.53575I$ $c=-0.002269+1.059790I$ $d=-0.00292+2.69163I$	$-13.06970+1.34685I$	0
$u=\ \ 0.22004+1.44810I$ $a=-0.50248+1.78125I$ $b=-0.35055+2.76095I$ $c=\ \ 0.087028-1.048760I$ $d=\ \ 0.11101-2.67072I$	$-12.6554+7.5654I$	0
$u=\ \ 0.22004-1.44810I$ $a=-0.50248-1.78125I$ $b=-0.35055-2.76095I$ $c=\ \ 0.087028+1.048760I$ $d=\ \ 0.11101+2.67072I$	$-12.6554-7.5654I$	0
$u=\ \ 0.499413$ $a=\ \ 0.957005$ $b=-0.00308149$ $c=\ \ 0.538321$ $d=\ \ 0.683046$	1.20722	9.11790

II. $\boldsymbol{I_2^u = \langle -c^2u + d - c,\ u^3c - u^3 + \cdots + c^3 + 1,\ -u^2 + b + u - 1,\ u^3 - u^2 + a + u - 1,\ u^4 + u^2 - u + 1\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -u^3 + u^2 - u + 1 \\ u^2 - u + 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^3 + u^2 + 1 \\ -u^3 + u^2 - u + 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^3 \\ -u^3 - u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} c \\ c^2u + c \end{pmatrix}$$
$$a_8 = \begin{pmatrix} c^2u \\ c^2u + c \end{pmatrix}$$
$$a_7 = \begin{pmatrix} c^2u + u^2c \\ c^2u + u^2c + c \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u^3c^2 + c \\ u^3c^2 + c^2u + c \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^3 - 4u^2 + 2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^4+2u^3+3u^2+u+1)^3$
c_2, c_4, c_5 c_9	$(u^4+u^2-u+1)^3$
c_3	$(u^4-3u^3+4u^2-3u+2)^3$
c_6, c_7, c_8 c_{10}, c_{12}	$u^{12}-4u^{10}-2u^9+6u^8+6u^7-u^6-6u^5-5u^4+u^3+3u^2+u+1$
c_{11}	$u^{12}-8u^{11}+\cdots+5u+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^4 + 2y^3 + 7y^2 + 5y + 1)^3$
c_2, c_4, c_5 c_9	$(y^4 + 2y^3 + 3y^2 + y + 1)^3$
c_3	$(y^4 - y^3 + 2y^2 + 7y + 4)^3$
c_6, c_7, c_8 c_{10}, c_{12}	$y^{12} - 8y^{11} + \cdots + 5y + 1$
c_{11}	$y^{12} - 8y^{11} + \cdots - 31y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.547424 + 0.585652I$ $a = 0.808493 - 0.270093I$ $b = 0.409261 + 0.055548I$ $c = 0.443738 + 0.456353I$ $d = 0.200332 + 0.671410I$	$0.98010 + 1.39709I$	$3.77019 - 3.86736I$
$u = 0.547424 + 0.585652I$ $a = 0.808493 - 0.270093I$ $b = 0.409261 + 0.055548I$ $c = -1.160590 + 0.760536I$ $d = 0.294006 + 0.244250I$	$0.98010 + 1.39709I$	$3.77019 - 3.86736I$
$u = 0.547424 + 0.585652I$ $a = 0.808493 - 0.270093I$ $b = 0.409261 + 0.055548I$ $c = 0.716849 - 1.216890I$ $d = 1.20928 - 2.73824I$	$0.98010 + 1.39709I$	$3.77019 - 3.86736I$
$u = 0.547424 - 0.585652I$ $a = 0.808493 + 0.270093I$ $b = 0.409261 - 0.055548I$ $c = 0.443738 - 0.456353I$ $d = 0.200332 - 0.671410I$	$0.98010 - 1.39709I$	$3.77019 + 3.86736I$
$u = 0.547424 - 0.585652I$ $a = 0.808493 + 0.270093I$ $b = 0.409261 - 0.055548I$ $c = -1.160590 - 0.760536I$ $d = 0.294006 - 0.244250I$	$0.98010 - 1.39709I$	$3.77019 + 3.86736I$
$u = 0.547424 - 0.585652I$ $a = 0.808493 + 0.270093I$ $b = 0.409261 - 0.055548I$ $c = 0.716849 + 1.216890I$ $d = 1.20928 + 2.73824I$	$0.98010 - 1.39709I$	$3.77019 + 3.86736I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.547424 + 1.120870I$ $a = -1.30849 - 1.94753I$ $b = 0.59074 - 2.34806I$ $c = 0.800094 + 0.563476I$ $d = -0.387185 + 0.431526I$	$-2.62503 - 7.64338I$	$-1.77019 + 6.51087I$
$u = -0.547424 + 1.120870I$ $a = -1.30849 - 1.94753I$ $b = 0.59074 - 2.34806I$ $c = -0.294837 - 1.086830I$ $d = -0.41415 - 2.66421I$	$-2.62503 - 7.64338I$	$-1.77019 + 6.51087I$
$u = -0.547424 + 1.120870I$ $a = -1.30849 - 1.94753I$ $b = 0.59074 - 2.34806I$ $c = -0.505257 + 0.523356I$ $d = 0.097717 + 0.791998I$	$-2.62503 - 7.64338I$	$-1.77019 + 6.51087I$
$u = -0.547424 - 1.120870I$ $a = -1.30849 + 1.94753I$ $b = 0.59074 + 2.34806I$ $c = 0.800094 - 0.563476I$ $d = -0.387185 - 0.431526I$	$-2.62503 + 7.64338I$	$-1.77019 - 6.51087I$
$u = -0.547424 - 1.120870I$ $a = -1.30849 + 1.94753I$ $b = 0.59074 + 2.34806I$ $c = -0.294837 + 1.086830I$ $d = -0.41415 + 2.66421I$	$-2.62503 + 7.64338I$	$-1.77019 - 6.51087I$
$u = -0.547424 - 1.120870I$ $a = -1.30849 + 1.94753I$ $b = 0.59074 + 2.34806I$ $c = -0.505257 - 0.523356I$ $d = 0.097717 - 0.791998I$	$-2.62503 + 7.64338I$	$-1.77019 - 6.51087I$

III. $\boldsymbol{I^u_3 = \langle -c^2u + d - c,\ -2u^5c - u^5 + \cdots - 2c - 2,\ -2u^5 - u^4 + \cdots + b - 2,\ -u^4 - u^2 + a - u - 1,\ u^6 + u^5 + \cdots + 2u + 1\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u^4 + u^2 + u + 1 \\ 2u^5 + u^4 + 3u^3 + 2u^2 + 3u + 2 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u^5 + u^4 + 2u^3 + 2u^2 + 2u + 2 \\ u^5 + 2u^3 + u^2 + 2u + 1 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u^3 \\ -u^3 - u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} c \\ c^2u + c \end{pmatrix}$$
$$a_8 = \begin{pmatrix} c^2u \\ c^2u + c \end{pmatrix}$$
$$a_7 = \begin{pmatrix} c^2u + u^2c \\ c^2u + u^2c + c \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} u^3c^2 + c \\ u^3c^2 + c^2u + c \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4u^3 - 4u - 2$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^6+3u^5+4u^4+2u^3+1)^3$
c_2, c_4, c_5 c_9	$(u^6+u^5+2u^4+2u^3+2u^2+2u+1)^3$
c_3	$(u^3+u^2-1)^6$
c_6, c_7, c_8 c_{10}, c_{12}	$u^{18}-6u^{16}+\cdots+2u^3+1$
c_{11}	$u^{18}-12u^{17}+\cdots+8u^2+1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^6 - y^5 + 4y^4 - 2y^3 + 8y^2 + 1)^3$
c_2, c_4, c_5 c_9	$(y^6 + 3y^5 + 4y^4 + 2y^3 + 1)^3$
c_3	$(y^3 - y^2 + 2y - 1)^6$
c_6, c_7, c_8 c_{10}, c_{12}	$y^{18} - 12y^{17} + \cdots + 8y^2 + 1$
c_{11}	$y^{18} - 12y^{17} + \cdots + 16y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.498832 + 1.001300I$ $a = 0.315305 + 0.494282I$ $b = 0.017526 + 0.363437I$ $c = -0.824384 + 0.621328I$ $d = 0.347814 + 0.404255I$	$-0.26574 + 2.82812I$	$1.50976 - 2.97945I$
$u = 0.498832 + 1.001300I$ $a = 0.315305 + 0.494282I$ $b = 0.017526 + 0.363437I$ $c = 0.334645 - 1.151790I$ $d = 0.50063 - 2.75254I$	$-0.26574 + 2.82812I$	$1.50976 - 2.97945I$
$u = 0.498832 + 1.001300I$ $a = 0.315305 + 0.494282I$ $b = 0.017526 + 0.363437I$ $c = 0.489739 + 0.530460I$ $d = -0.051234 + 0.748043I$	$-0.26574 + 2.82812I$	$1.50976 - 2.97945I$
$u = 0.498832 - 1.001300I$ $a = 0.315305 - 0.494282I$ $b = 0.017526 - 0.363437I$ $c = -0.824384 - 0.621328I$ $d = 0.347814 - 0.404255I$	$-0.26574 - 2.82812I$	$1.50976 + 2.97945I$
$u = 0.498832 - 1.001300I$ $a = 0.315305 - 0.494282I$ $b = 0.017526 - 0.363437I$ $c = 0.334645 + 1.151790I$ $d = 0.50063 + 2.75254I$	$-0.26574 - 2.82812I$	$1.50976 + 2.97945I$
$u = 0.498832 - 1.001300I$ $a = 0.315305 - 0.494282I$ $b = 0.017526 - 0.363437I$ $c = 0.489739 - 0.530460I$ $d = -0.051234 - 0.748043I$	$-0.26574 - 2.82812I$	$1.50976 + 2.97945I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.284920 + 1.115140I$ $a = \quad 0.50000 + 1.95694I$ $b = -0.94728 + 1.47725I$ $c = \quad 0.702880 + 0.625158I$ $d = -0.306538 + 0.489866I$	-4.40332	$-5.01951 + 0.I$
$u = -0.284920 + 1.115140I$ $a = \quad 0.50000 + 1.95694I$ $b = -0.94728 + 1.47725I$ $c = -0.182034 - 1.189200I$ $d = -0.27134 - 2.85264I$	-4.40332	$-5.01951 + 0.I$
$u = -0.284920 + 1.115140I$ $a = \quad 0.50000 + 1.95694I$ $b = -0.94728 + 1.47725I$ $c = -0.520845 + 0.564046I$ $d = \quad 0.147721 + 0.679189I$	-4.40332	$-5.01951 + 0.I$
$u = -0.284920 - 1.115140I$ $a = \quad 0.50000 - 1.95694I$ $b = -0.94728 - 1.47725I$ $c = \quad 0.702880 - 0.625158I$ $d = -0.306538 - 0.489866I$	-4.40332	$-5.01951 + 0.I$
$u = -0.284920 - 1.115140I$ $a = \quad 0.50000 - 1.95694I$ $b = -0.94728 - 1.47725I$ $c = -0.182034 + 1.189200I$ $d = -0.27134 + 2.85264I$	-4.40332	$-5.01951 + 0.I$
$u = -0.284920 - 1.115140I$ $a = \quad 0.50000 - 1.95694I$ $b = -0.94728 - 1.47725I$ $c = -0.520845 - 0.564046I$ $d = \quad 0.147721 - 0.679189I$	-4.40332	$-5.01951 + 0.I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.713912 + 0.305839I$ $a = 0.684695 - 0.494282I$ $b = 0.42975 + 1.50598I$ $c = -0.923278 - 0.830773I$ $d = -1.50829 - 1.87634I$	$-0.26574 + 2.82812I$	$1.50976 - 2.97945I$
$u = -0.713912 + 0.305839I$ $a = 0.684695 - 0.494282I$ $b = 0.42975 + 1.50598I$ $c = -0.549584 + 0.390865I$ $d = -0.524751 + 0.743232I$	$-0.26574 + 2.82812I$	$1.50976 - 2.97945I$
$u = -0.713912 + 0.305839I$ $a = 0.684695 - 0.494282I$ $b = 0.42975 + 1.50598I$ $c = 1.47286 + 0.43991I$ $d = -0.334008 + 0.119065I$	$-0.26574 + 2.82812I$	$1.50976 - 2.97945I$
$u = -0.713912 - 0.305839I$ $a = 0.684695 + 0.494282I$ $b = 0.42975 - 1.50598I$ $c = -0.923278 + 0.830773I$ $d = -1.50829 + 1.87634I$	$-0.26574 - 2.82812I$	$1.50976 + 2.97945I$
$u = -0.713912 - 0.305839I$ $a = 0.684695 + 0.494282I$ $b = 0.42975 - 1.50598I$ $c = -0.549584 - 0.390865I$ $d = -0.524751 - 0.743232I$	$-0.26574 - 2.82812I$	$1.50976 + 2.97945I$
$u = -0.713912 - 0.305839I$ $a = 0.684695 + 0.494282I$ $b = 0.42975 - 1.50598I$ $c = 1.47286 - 0.43991I$ $d = -0.334008 - 0.119065I$	$-0.26574 - 2.82812I$	$1.50976 + 2.97945I$

IV. $I_1^v = \langle a,\ d,\ c - v,\ b - v,\ v^2 - v + 1\rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0 \\ v \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} v \\ v \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1 \\ -v + 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} v \\ 0 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1 \\ v - 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} v \\ 0 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} v - 1 \\ v - 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4v + 11$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_5	$u^2 - u + 1$
c_2	$u^2 + u + 1$
c_4, c_7, c_8 c_9, c_{10}	u^2
c_6, c_{11}	$(u+1)^2$
c_{12}	$(u-1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_5	$y^2 + y + 1$
c_4, c_7, c_8 c_9, c_{10}	y^2
c_6, c_{11}, c_{12}	$(y-1)^2$

(vi) Complex Volumes and Cusp Shapes

	Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v =$	$0.500000 + 0.866025I$		
$a =$	0		
$b =$	$0.500000 + 0.866025I$	$1.64493 + 2.02988I$	$9.00000 - 3.46410I$
$c =$	$0.500000 + 0.866025I$		
$d =$	0		
$v =$	$0.500000 - 0.866025I$		
$a =$	0		
$b =$	$0.500000 - 0.866025I$	$1.64493 - 2.02988I$	$9.00000 + 3.46410I$
$c =$	$0.500000 - 0.866025I$		
$d =$	0		

V. $I_2^v = \langle a,\ d+v+1,\ av+c+1,\ b+v,\ v^2+v+1\rangle$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0 \\ -v \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -v \\ -v \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1 \\ v+1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} v \\ 0 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -1 \\ -v-1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -1 \\ -v-1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} v+1 \\ v+1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 1 \\ v+1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -1 \\ -v-1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 4v - 1$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3, c_5	$u^2 - u + 1$
c_2	$u^2 + u + 1$
c_4, c_6, c_9 c_{11}, c_{12}	u^2
c_7, c_8	$(u-1)^2$
c_{10}	$(u+1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_5	$y^2 + y + 1$
c_4, c_6, c_9 c_{11}, c_{12}	y^2
c_7, c_8, c_{10}	$(y-1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -0.500000 + 0.866025I$ $a = 0$ $b = 0.500000 - 0.866025I$ $c = -1.00000$ $d = -0.500000 - 0.866025I$	$-1.64493 - 2.02988I$	$-3.00000 + 3.46410I$
$v = -0.500000 - 0.866025I$ $a = 0$ $b = 0.500000 + 0.866025I$ $c = -1.00000$ $d = -0.500000 + 0.866025I$	$-1.64493 + 2.02988I$	$-3.00000 - 3.46410I$

VI. $I_3^v = \langle c,\ d-1,\ b,\ a-1,\ v-1 \rangle$

(i) Arc colorings

$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

$a_2 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

$a_{11} = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$

$a_8 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$

$a_7 = \begin{pmatrix} 0 \\ -1 \end{pmatrix}$

$a_{12} = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_3 c_4, c_5, c_9	u
c_6, c_7, c_8	$u - 1$
c_{10}, c_{11}, c_{12}	$u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_3 c_4, c_5, c_9	y
c_6, c_7, c_8 c_{10}, c_{11}, c_{12}	$y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^v		$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v =$	1.00000		
$a =$	1.00000		
$b =$	0	0	0
$c =$	0		
$d =$	1.00000		

VII. $\boldsymbol{I_4^v =}$
$\boldsymbol{\langle a,\ db+da+\cdots+b-1,\ a^2d-da+\cdots-a+1,\ dv-1,\ cv+ba-bv-b-a,\ b^2-b+1\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0 \\ b \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} b \\ b \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 1 \\ -b+1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -1 \\ b-1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} c \\ -cb+c-1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -c+v \\ cb-c+1 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} -c \\ cb-c+1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} c-1 \\ -cb+c+b-2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= c^2b - 2cb - v^2 + 2c - 4b + 3$

(iv) u-Polynomials at the component : It cannot be defined for a positive dimension component.

(v) Riley Polynomials at the component : It cannot be defined for a positive dimension component.

(iv) Complex Volumes and Cusp Shapes

Solution to I_4^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = \cdots$		
$a = \cdots$		
$b = \cdots$	$-\,2.02988I$	$3.99982 - 3.44351I$
$c = \cdots$		
$d = \cdots$		

VIII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u(u^2-u+1)^2(u^4+2u^3+3u^2+u+1)^3(u^6+3u^5+4u^4+2u^3+1)^3$ $\cdot(u^{77}+36u^{76}+\cdots+216u-16)$
c_2	$u(u^2+u+1)^2(u^4+u^2-u+1)^3$ $\cdot((u^6+u^5+2u^4+2u^3+2u^2+2u+1)^3)(u^{77}+2u^{76}+\cdots+27u^2-4)$
c_3	$u(u^2-u+1)^2(u^3+u^2-1)^6(u^4-3u^3+4u^2-3u+2)^3$ $\cdot(u^{77}-2u^{76}+\cdots+351912u-66564)$
c_4, c_9	$u^5(u^4+u^2-u+1)^3(u^6+u^5+2u^4+2u^3+2u^2+2u+1)^3$ $\cdot(u^{77}-2u^{76}+\cdots-2560u^2-512)$
c_5	$u(u^2-u+1)^2(u^4+u^2-u+1)^3$ $\cdot((u^6+u^5+2u^4+2u^3+2u^2+2u+1)^3)(u^{77}+2u^{76}+\cdots+27u^2-4)$
c_6	$u^2(u-1)(u+1)^2$ $\cdot(u^{12}-4u^{10}-2u^9+6u^8+6u^7-u^6-6u^5-5u^4+u^3+3u^2+u+1)$ $\cdot(u^{18}-6u^{16}+\cdots+2u^3+1)(u^{77}+8u^{76}+\cdots-72u-16)$
c_7, c_8	$u^2(u-1)^3$ $\cdot(u^{12}-4u^{10}-2u^9+6u^8+6u^7-u^6-6u^5-5u^4+u^3+3u^2+u+1)$ $\cdot(u^{18}-6u^{16}+\cdots+2u^3+1)(u^{77}-8u^{76}+\cdots-72u-16)$
c_{10}	$u^2(u+1)^3$ $\cdot(u^{12}-4u^{10}-2u^9+6u^8+6u^7-u^6-6u^5-5u^4+u^3+3u^2+u+1)$ $\cdot(u^{18}-6u^{16}+\cdots+2u^3+1)(u^{77}-8u^{76}+\cdots-72u-16)$
c_{11}	$u^2(u+1)^3(u^{12}-8u^{11}+\cdots+5u+1)(u^{18}-12u^{17}+\cdots+8u^2+1)$ $\cdot(u^{77}-34u^{76}+\cdots+1568u-256)$
c_{12}	$u^2(u-1)^2(u+1)$ $\cdot(u^{12}-4u^{10}-2u^9+6u^8+6u^7-u^6-6u^5-5u^4+u^3+3u^2+u+1)$ $\cdot(u^{18}-6u^{16}+\cdots+2u^3+1)(u^{77}+8u^{76}+\cdots-72u-16)$

IX. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$y(y^2+y+1)^2(y^4+2y^3+7y^2+5y+1)^3$ $\cdot((y^6-y^5+4y^4-2y^3+8y^2+1)^3)(y^{77}+12y^{76}+\cdots+84256y-256)$
c_2, c_5	$y(y^2+y+1)^2(y^4+2y^3+3y^2+y+1)^3(y^6+3y^5+4y^4+2y^3+1)^3$ $\cdot(y^{77}+36y^{76}+\cdots+216y-16)$
c_3	$y(y^2+y+1)^2(y^3-y^2+2y-1)^6(y^4-y^3+2y^2+7y+4)^3$ $\cdot(y^{77}-12y^{76}+\cdots+120020616504y-4430766096)$
c_4, c_9	$y^5(y^4+2y^3+3y^2+y+1)^3(y^6+3y^5+4y^4+2y^3+1)^3$ $\cdot(y^{77}+30y^{76}+\cdots-2621440y-262144)$
c_6, c_{12}	$y^2(y-1)^3(y^{12}-8y^{11}+\cdots+5y+1)(y^{18}-12y^{17}+\cdots+8y^2+1)$ $\cdot(y^{77}-34y^{76}+\cdots+1568y-256)$
c_7, c_8, c_{10}	$y^2(y-1)^3(y^{12}-8y^{11}+\cdots+5y+1)(y^{18}-12y^{17}+\cdots+8y^2+1)$ $\cdot(y^{77}-74y^{76}+\cdots+7712y-256)$
c_{11}	$y^2(y-1)^3(y^{12}-8y^{11}+\cdots-31y+1)(y^{18}-12y^{17}+\cdots+16y+1)$ $\cdot(y^{77}+26y^{76}+\cdots+3416576y-65536)$