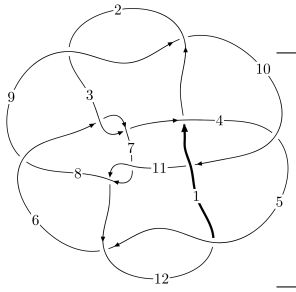
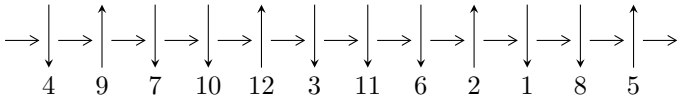
$12a_{1156}$ $(K12a_{1156})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

$$\underset{c_4}{4,10} \to \underset{c_1}{2,5} \to \underset{c_9}{1} \to \underset{c_2}{9} \to \underset{c_{12}}{3} \to \underset{c_5}{12} \to \underset{c_6}{6} \to \underset{c_8}{7} \to \underset{c_{11}}{8} \to 11 \twoheadrightarrow c_3, c_7, c_{10}$$

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

$$\begin{aligned}
I_1^u &= \langle -4.39785 \times 10^{29} u^{28} + 7.02003 \times 10^{30} u^{27} + \cdots + 4.21410 \times 10^{28} b + 1.41325 \times 10^{31}, \\
&\quad 5.66571 \times 10^{29} u^{28} - 1.06111 \times 10^{31} u^{27} + \cdots + 5.05693 \times 10^{29} a - 3.29177 \times 10^{31}, \\
&\quad 4u^{29} - 67u^{28} + \cdots - 1032u + 144 \rangle \\
I_2^u &= \langle 4.09097 \times 10^{106} a u^{58} - 8.30494 \times 10^{109} u^{58} + \cdots + 1.51366 \times 10^{108} a - 4.79521 \times 10^{111}, \\
&\quad 3.55453 \times 10^{112} a u^{58} - 1.91263 \times 10^{111} u^{58} + \cdots + 1.93423 \times 10^{114} a + 1.37454 \times 10^{113}, \\
&\quad u^{59} + 5u^{58} + \cdots + 88u + 37 \rangle \\
I_3^u &= \langle -32u^6 + 108u^5 - 177u^4 + 170u^3 - 77u^2 + 11b - 6u + 16, \\
&\quad 96u^6 - 412u^5 + 861u^4 - 1115u^3 + 935u^2 + 11a - 455u + 106, \\
&\quad 4u^7 - 17u^6 + 36u^5 - 48u^4 + 43u^3 - 24u^2 + 8u - 1 \rangle \\
I_4^u &= \langle -8148149 u^{18} a - 235125959 u^{18} + \cdots + 8148149 a + 240741869, \\
&\quad 7782798 u^{18} a + 171992551 u^{18} + \cdots + 92850756 a - 39782144,\ u^{19} + 5u^{18} + \cdots - 4u - 1 \rangle
\end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 192 representations.

[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. $I_1^u = \langle -4.40 \times 10^{29} u^{28} + 7.02 \times 10^{30} u^{27} + \cdots + 4.21 \times 10^{28} b + 1.41 \times 10^{31},\ 5.67 \times 10^{29} u^{28} - 1.06 \times 10^{31} u^{27} + \cdots + 5.06 \times 10^{29} a - 3.29 \times 10^{31},\ 4u^{29} - 67u^{28} + \cdots - 1032u + 144 \rangle$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix} -1.12039u^{28} + 20.9833u^{27} + \cdots - 489.650u + 65.0942 \\ 10.4360u^{28} - 166.584u^{27} + \cdots + 2133.17u - 335.363 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 9.31564u^{28} - 145.601u^{27} + \cdots + 1643.52u - 270.269 \\ 10.4360u^{28} - 166.584u^{27} + \cdots + 2133.17u - 335.363 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -0.167275u^{28} + 1.19205u^{27} + \cdots + 351.772u - 65.4652 \\ -1.14188u^{28} + 19.5944u^{27} + \cdots - 355.098u + 47.1296 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -5.90644u^{28} + 97.0033u^{27} + \cdots - 1411.96u + 203.811 \\ 9.23677u^{28} - 145.692u^{27} + \cdots + 1725.62u - 266.262 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 7.09885u^{28} - 114.752u^{27} + \cdots + 1867.48u - 310.603 \\ 2.01104u^{28} - 31.9469u^{27} + \cdots + 592.051u - 109.188 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.300652u^{28} - 4.39629u^{27} + \cdots + 104.297u - 23.3575 \\ -0.314456u^{28} + 5.41479u^{27} + \cdots + 45.5803u - 17.0050 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -6.39600u^{28} + 102.252u^{27} + \cdots - 1202.06u + 178.195 \\ -3.56491u^{28} + 61.8556u^{27} + \cdots - 1702.73u + 287.027 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 7.43460u^{28} - 120.183u^{27} + \cdots + 2485.47u - 437.881 \\ 5.17344u^{28} - 80.0547u^{27} + \cdots + 1078.28u - 196.079 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 10.9183u^{28} - 170.654u^{27} + \cdots + 2401.20u - 411.393 \\ 12.2274u^{28} - 191.440u^{27} + \cdots + 2406.52u - 393.058 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -56.3204u^{28} + 888.787u^{27} + \cdots - 10030.5u + 1517.92$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{10}	$u^{29} + 2u^{27} + \cdots + 13u + 4$
c_2, c_5, c_9 c_{12}	$u^{29} + 13u^{27} + \cdots + 3u + 1$
c_3, c_6, c_7 c_{11}	$2(2u^{29} + u^{28} + \cdots - 2u^2 + 1)$
c_4	$4(4u^{29} - 67u^{28} + \cdots - 1032u + 144)$
c_8	$u^{29} - 9u^{28} + \cdots - 2794u + 324$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{10}	$y^{29} + 4y^{28} + \cdots + 361y - 16$
c_2, c_5, c_9 c_{12}	$y^{29} + 26y^{28} + \cdots - y - 1$
c_3, c_6, c_7 c_{11}	$4(4y^{29} - 69y^{28} + \cdots + 4y - 1)$
c_4	$16(16y^{29} - 113y^{28} + \cdots + 197280y - 20736)$
c_8	$y^{29} - 7y^{28} + \cdots + 371932y - 104976$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.720097 + 0.708724I$ $a = 0.816159 - 0.207612I$ $b = -0.169307 + 1.103730I$	$-2.35305 + 2.75713I$	$-6.94256 - 4.42813I$
$u = 0.720097 - 0.708724I$ $a = 0.816159 + 0.207612I$ $b = -0.169307 - 1.103730I$	$-2.35305 - 2.75713I$	$-6.94256 + 4.42813I$
$u = -1.073600 + 0.143769I$ $a = -0.29269 + 1.43804I$ $b = 0.104360 - 0.757596I$	$-11.29210 - 3.08774I$	$-16.1022 + 0.5651I$
$u = -1.073600 - 0.143769I$ $a = -0.29269 - 1.43804I$ $b = 0.104360 + 0.757596I$	$-11.29210 + 3.08774I$	$-16.1022 - 0.5651I$
$u = 0.824430 + 0.723434I$ $a = -0.409830 + 0.858684I$ $b = -0.840941 - 1.121640I$	$-2.53290 - 7.99007I$	$-6.91156 + 8.81648I$
$u = 0.824430 - 0.723434I$ $a = -0.409830 - 0.858684I$ $b = -0.840941 + 1.121640I$	$-2.53290 + 7.99007I$	$-6.91156 - 8.81648I$
$u = 0.466322 + 0.746390I$ $a = 0.521683 - 0.597880I$ $b = 0.339053 + 0.681385I$	$2.29372 + 0.20351I$	$3.05461 - 1.89825I$
$u = 0.466322 - 0.746390I$ $a = 0.521683 + 0.597880I$ $b = 0.339053 - 0.681385I$	$2.29372 - 0.20351I$	$3.05461 + 1.89825I$
$u = 0.658708 + 0.957825I$ $a = -0.745982 - 0.471011I$ $b = 0.936085 - 0.375554I$	$-5.81070 + 3.60180I$	$-14.0003 - 4.5219I$
$u = 0.658708 - 0.957825I$ $a = -0.745982 + 0.471011I$ $b = 0.936085 + 0.375554I$	$-5.81070 - 3.60180I$	$-14.0003 + 4.5219I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.057443+0.816735I$ $a=\ \ 0.837762-0.521934I$ $b=-0.102754+0.596050I$	$0.31369+1.71075I$	$0.74020-4.40719I$
$u=-0.057443-0.816735I$ $a=\ \ 0.837762+0.521934I$ $b=-0.102754-0.596050I$	$0.31369-1.71075I$	$0.74020+4.40719I$
$u=\ \ 0.745889+0.082585I$ $a=-0.150710+0.499245I$ $b=-0.96323+1.10340I$	$-1.67729+3.70537I$	$-2.81014-3.47039I$
$u=\ \ 0.745889-0.082585I$ $a=-0.150710-0.499245I$ $b=-0.96323-1.10340I$	$-1.67729-3.70537I$	$-2.81014+3.47039I$
$u=\ \ 1.086530+0.685326I$ $a=-0.229661-0.935105I$ $b=\ \ 1.61437+0.77483I$	$-7.32559-9.58865I$	0
$u=\ \ 1.086530-0.685326I$ $a=-0.229661+0.935105I$ $b=\ \ 1.61437-0.77483I$	$-7.32559+9.58865I$	0
$u=\ \ 1.222990+0.529637I$ $a=\ \ 0.003013+0.787535I$ $b=-1.26809-1.31448I$	$-3.88276-6.49679I$	0
$u=\ \ 1.222990-0.529637I$ $a=\ \ 0.003013-0.787535I$ $b=-1.26809+1.31448I$	$-3.88276+6.49679I$	0
$u=-0.644975+0.131653I$ $a=-0.53666+2.56308I$ $b=\ \ 0.088584-1.040810I$	$-9.42418+4.39090I$	$-3.18290-8.10704I$
$u=-0.644975-0.131653I$ $a=-0.53666-2.56308I$ $b=\ \ 0.088584+1.040810I$	$-9.42418-4.39090I$	$-3.18290+8.10704I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.632833$ $a=\ \ 0.443093$ $b=-0.171728$	-1.18425	-6.90200
$u=\ \ 1.32674+0.78308I$ $a=\ \ 0.016779+0.590118I$ $b=-0.666236-0.839680I$	$-0.43628-5.75837I$	0
$u=\ \ 1.32674-0.78308I$ $a=\ \ 0.016779-0.590118I$ $b=-0.666236+0.839680I$	$-0.43628+5.75837I$	0
$u=\ \ 1.36364+0.87040I$ $a=-0.246329-0.990685I$ $b=\ \ 1.31604+1.15458I$	$-14.7881-19.4687I$	0
$u=\ \ 1.36364-0.87040I$ $a=-0.246329+0.990685I$ $b=\ \ 1.31604-1.15458I$	$-14.7881+19.4687I$	0
$u=\ \ 1.61175+0.69141I$ $a=\ \ 0.147204+0.728894I$ $b=-0.844171-1.132660I$	$-4.85481-7.14721I$	0
$u=\ \ 1.61175-0.69141I$ $a=\ \ 0.147204-0.728894I$ $b=-0.844171+1.132660I$	$-4.85481+7.14721I$	0
$u=\ \ 0.44033+1.98075I$ $a=-0.660627+0.066836I$ $b=\ \ 0.542107-0.366872I$	$-11.6596+10.7457I$	0
$u=\ \ 0.44033-1.98075I$ $a=-0.660627-0.066836I$ $b=\ \ 0.542107+0.366872I$	$-11.6596-10.7457I$	0

II. $I_2^u = \langle 4.09\times10^{106}au^{58} - 8.30\times10^{109}u^{58} + \cdots + 1.51\times10^{108}a - 4.80\times10^{111},\ 3.55\times10^{112}au^{58} - 1.91\times10^{111}u^{58} + \cdots + 1.93\times10^{114}a + 1.37\times10^{113},\ u^{59} + 5u^{58} + \cdots + 88u + 37\rangle$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix}a\\-0.333333au^{58} + 676.688u^{58} + \cdots - 12.3333a + 39071.5\end{pmatrix}$$

$$a_5 = \begin{pmatrix}1\\u^2\end{pmatrix}$$

$$a_1 = \begin{pmatrix}-0.333333au^{58} + 676.688u^{58} + \cdots - 11.3333a + 39071.5\\-0.333333au^{58} + 676.688u^{58} + \cdots - 12.3333a + 39071.5\end{pmatrix}$$

$$a_9 = \begin{pmatrix}-427.925au^{58} + 83.4254u^{58} + \cdots - 23483.0a + 1263.58\\-248.764au^{58} + 673.597u^{58} + \cdots - 15588.5a + 28009.8\end{pmatrix}$$

$$a_3 = \begin{pmatrix}-359.971au^{58} - 1877.03u^{58} + \cdots - 13372.4a - 98725.3\\-468.025au^{58} - 728.793u^{58} + \cdots - 21966.8a - 41528.5\end{pmatrix}$$

$$a_{12} = \begin{pmatrix}-0.333333au^{58} + 248.764u^{58} + \cdots - 11.3333a + 15588.5\\-0.333333au^{58} + 488.441u^{58} + \cdots - 12.3333a + 28492.8\end{pmatrix}$$

$$a_6 = \begin{pmatrix}-135.399au^{58} + 384.267u^{58} + \cdots - 9204.26a + 20691.9\\-299.329au^{58} + 543.289u^{58} + \cdots - 18072.3a + 23201.5\end{pmatrix}$$

$$a_7 = \begin{pmatrix}-14.1655au^{58} + 2972.25u^{58} + \cdots - 12657.8a + 156717.\\178.414au^{58} + 913.497u^{58} + \cdots + 5746.28a + 47640.1\end{pmatrix}$$

$$a_8 = \begin{pmatrix}-179.259au^{58} - 651.148u^{58} + \cdots - 5103.34a - 37252.9\\392.636au^{58} - 1102.18u^{58} + \cdots + 24548.9a - 52252.9\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}-676.688au^{58} + 806.803u^{58} + \cdots - 39071.5a + 29162.6\\49.7802u^{58} + 181.256u^{57} + \cdots + 3949.92u - 110.842\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -724.938u^{58} - 3242.57u^{57} + \cdots - 32438.6u - 48642.6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{118} - 11u^{117} + \cdots - 3135u + 89$
c_2, c_5	$u^{118} - 3u^{117} + \cdots - 482474u - 33653$
c_3, c_7	$u^{118} + 4u^{117} + \cdots + 1173178u - 289973$
c_4	$(u^{59} + 5u^{58} + \cdots + 88u + 37)^2$
c_6, c_{11}	$-u^{118} + 4u^{117} + \cdots + 1173178u + 289973$
c_8	$(u^{59} - u^{58} + \cdots - 25551u - 10881)^2$
c_9, c_{12}	$-u^{118} - 3u^{117} + \cdots - 482474u + 33653$
c_{10}	$u^{118} + 11u^{117} + \cdots + 3135u + 89$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{10}	$y^{118} - 19y^{117} + \cdots - 1556387y + 7921$
c_2, c_5, c_9 c_{12}	$y^{118} + 105y^{117} + \cdots - 4589119374y + 1132524409$
c_3, c_6, c_7 c_{11}	$y^{118} - 90y^{117} + \cdots - 3230687998032y + 84084340729$
c_4	$(y^{59} - 29y^{58} + \cdots + 56066y - 1369)^2$
c_8	$(y^{59} - 41y^{58} + \cdots + 2158261713y - 118396161)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.925169 + 0.382015I$ $a = 0.035968 + 1.143290I$ $b = -1.21126 - 1.25562I$	$-3.29612 - 3.39378I$	0
$u = 0.925169 + 0.382015I$ $a = -0.552856 - 0.144734I$ $b = -1.044430 - 0.552897I$	$-3.29612 - 3.39378I$	0
$u = 0.925169 - 0.382015I$ $a = 0.035968 - 1.143290I$ $b = -1.21126 + 1.25562I$	$-3.29612 + 3.39378I$	0
$u = 0.925169 - 0.382015I$ $a = -0.552856 + 0.144734I$ $b = -1.044430 + 0.552897I$	$-3.29612 + 3.39378I$	0
$u = -0.747145 + 0.669765I$ $a = -0.982655 + 0.906547I$ $b = 1.86104 - 0.60151I$	$-10.04250 - 1.49168I$	0
$u = -0.747145 + 0.669765I$ $a = -0.92063 - 1.15205I$ $b = -0.860579 + 0.360405I$	$-10.04250 - 1.49168I$	0
$u = -0.747145 - 0.669765I$ $a = -0.982655 - 0.906547I$ $b = 1.86104 + 0.60151I$	$-10.04250 + 1.49168I$	0
$u = -0.747145 - 0.669765I$ $a = -0.92063 + 1.15205I$ $b = -0.860579 - 0.360405I$	$-10.04250 + 1.49168I$	0
$u = -0.906248 + 0.369714I$ $a = -1.046790 + 0.147402I$ $b = -1.044490 + 0.604996I$	$-5.20943 + 4.94504I$	0
$u = -0.906248 + 0.369714I$ $a = -0.395471 + 1.285810I$ $b = 1.61705 - 1.45504I$	$-5.20943 + 4.94504I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.906248-0.369714I$ $a=-1.046790-0.147402I$ $b=-1.044490-0.604996I$	$-5.20943-4.94504I$	0
$u=-0.906248-0.369714I$ $a=-0.395471-1.285810I$ $b=1.61705+1.45504I$	$-5.20943-4.94504I$	0
$u=-0.692262+0.769246I$ $a=0.314146-1.048700I$ $b=-0.540795+0.898103I$	$-0.07380+2.38506I$	0
$u=-0.692262+0.769246I$ $a=0.721905-0.121987I$ $b=0.272743-0.070100I$	$-0.07380+2.38506I$	0
$u=-0.692262-0.769246I$ $a=0.314146+1.048700I$ $b=-0.540795-0.898103I$	$-0.07380-2.38506I$	0
$u=-0.692262-0.769246I$ $a=0.721905+0.121987I$ $b=0.272743+0.070100I$	$-0.07380-2.38506I$	0
$u=-0.823608+0.499933I$ $a=0.009280-1.114320I$ $b=-0.72575+1.65605I$	$-3.78280+2.08366I$	0
$u=-0.823608+0.499933I$ $a=1.216570-0.274113I$ $b=0.319259-0.804366I$	$-3.78280+2.08366I$	0
$u=-0.823608-0.499933I$ $a=0.009280+1.114320I$ $b=-0.72575-1.65605I$	$-3.78280-2.08366I$	0
$u=-0.823608-0.499933I$ $a=1.216570+0.274113I$ $b=0.319259+0.804366I$	$-3.78280-2.08366I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.028090 + 0.174565I$ $a = -0.05948 + 1.49500I$ $b = 0.55725 - 1.55166I$	$-13.68870 + 1.27084I$	0
$u = 1.028090 + 0.174565I$ $a = -0.24389 - 1.58507I$ $b = 0.521647 + 0.028648I$	$-13.68870 + 1.27084I$	0
$u = 1.028090 - 0.174565I$ $a = -0.05948 - 1.49500I$ $b = 0.55725 + 1.55166I$	$-13.68870 - 1.27084I$	0
$u = 1.028090 - 0.174565I$ $a = -0.24389 + 1.58507I$ $b = 0.521647 - 0.028648I$	$-13.68870 - 1.27084I$	0
$u = 0.942697 + 0.483424I$ $a = 0.985735 - 0.088354I$ $b = 0.682191 + 0.581000I$	$-4.40219 - 0.14299I$	0
$u = 0.942697 + 0.483424I$ $a = -0.510967 - 1.076570I$ $b = 1.33419 + 1.27073I$	$-4.40219 - 0.14299I$	0
$u = 0.942697 - 0.483424I$ $a = 0.985735 + 0.088354I$ $b = 0.682191 - 0.581000I$	$-4.40219 + 0.14299I$	0
$u = 0.942697 - 0.483424I$ $a = -0.510967 + 1.076570I$ $b = 1.33419 - 1.27073I$	$-4.40219 + 0.14299I$	0
$u = -0.928534 + 0.003793I$ $a = -0.18750 + 1.50332I$ $b = 1.22888 - 1.06141I$	$-10.33520 - 4.10717I$	0
$u = -0.928534 + 0.003793I$ $a = -0.35948 + 1.54405I$ $b = -0.968632 - 0.406372I$	$-10.33520 - 4.10717I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.928534-0.003793I$ $a=-0.18750-1.50332I$ $b=\ \ 1.22888+1.06141I$	$-10.33520+4.10717I$	0
$u=-0.928534-0.003793I$ $a=-0.35948-1.54405I$ $b=-0.968632+0.406372I$	$-10.33520+4.10717I$	0
$u=-0.602517+0.678066I$ $a=-0.455795-1.107230I$ $b=-0.577694+0.829370I$	$0.62054+3.49413I$	0
$u=-0.602517+0.678066I$ $a=\ \ 0.295413+0.402109I$ $b=\ \ 0.811099-0.533362I$	$0.62054+3.49413I$	0
$u=-0.602517-0.678066I$ $a=-0.455795+1.107230I$ $b=-0.577694-0.829370I$	$0.62054-3.49413I$	0
$u=-0.602517-0.678066I$ $a=\ \ 0.295413-0.402109I$ $b=\ \ 0.811099+0.533362I$	$0.62054-3.49413I$	0
$u=\ \ 0.843807+0.011210I$ $a=-0.26781+1.53879I$ $b=\ \ 1.69725-1.45549I$	$-14.4409-9.2601I$	0
$u=\ \ 0.843807+0.011210I$ $a=\ \ 0.78291-1.83764I$ $b=\ \ 1.205240+0.086311I$	$-14.4409-9.2601I$	0
$u=\ \ 0.843807-0.011210I$ $a=-0.26781-1.53879I$ $b=\ \ 1.69725+1.45549I$	$-14.4409+9.2601I$	0
$u=\ \ 0.843807-0.011210I$ $a=\ \ 0.78291+1.83764I$ $b=\ \ 1.205240-0.086311I$	$-14.4409+9.2601I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.962252+0.649649I$ $a=-0.329567+1.313680I$ $b=\ \ 1.134780-0.386890I$	$-10.72170+6.62436I$	0
$u=-0.962252+0.649649I$ $a=\ \ 0.380380+0.097982I$ $b=-1.37690-0.36870I$	$-10.72170+6.62436I$	0
$u=-0.962252-0.649649I$ $a=-0.329567-1.313680I$ $b=\ \ 1.134780+0.386890I$	$-10.72170-6.62436I$	0
$u=-0.962252-0.649649I$ $a=\ \ 0.380380-0.097982I$ $b=-1.37690+0.36870I$	$-10.72170-6.62436I$	0
$u=\ \ 0.810093$ $a=-0.26112+1.67767I$ $b=-1.113860-0.750829I$	-6.16998	0
$u=\ \ 0.810093$ $a=-0.26112-1.67767I$ $b=-1.113860+0.750829I$	-6.16998	0
$u=-0.999222+0.769363I$ $a=\ \ 0.384087-0.908940I$ $b=-0.950138+0.948579I$	$-1.05556+3.49309I$	0
$u=-0.999222+0.769363I$ $a=\ \ 0.520745+0.338761I$ $b=\ \ 0.535115-0.475107I$	$-1.05556+3.49309I$	0
$u=-0.999222-0.769363I$ $a=\ \ 0.384087+0.908940I$ $b=-0.950138-0.948579I$	$-1.05556-3.49309I$	0
$u=-0.999222-0.769363I$ $a=\ \ 0.520745-0.338761I$ $b=\ \ 0.535115+0.475107I$	$-1.05556-3.49309I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.450304 + 0.577978I$ $a = 0.099752 + 0.713886I$ $b = 0.518506 - 1.088280I$	$-3.01401 - 3.69735I$	$0. + 10.67882I$
$u = 0.450304 + 0.577978I$ $a = -1.23156 - 1.65986I$ $b = 0.494796 + 0.188749I$	$-3.01401 - 3.69735I$	$0. + 10.67882I$
$u = 0.450304 - 0.577978I$ $a = 0.099752 - 0.713886I$ $b = 0.518506 + 1.088280I$	$-3.01401 + 3.69735I$	$0. - 10.67882I$
$u = 0.450304 - 0.577978I$ $a = -1.23156 + 1.65986I$ $b = 0.494796 - 0.188749I$	$-3.01401 + 3.69735I$	$0. - 10.67882I$
$u = -0.707702$ $a = 0.375182 + 0.233291I$ $b = -0.155482 + 0.564837I$	-1.10836	-4.56540
$u = -0.707702$ $a = 0.375182 - 0.233291I$ $b = -0.155482 - 0.564837I$	-1.10836	-4.56540
$u = 0.893562 + 0.934702I$ $a = 0.675084 + 0.807292I$ $b = -1.44714 - 0.83277I$	$-3.84434 - 5.57990I$	0
$u = 0.893562 + 0.934702I$ $a = -0.572786 + 1.108320I$ $b = -0.666059 - 0.744407I$	$-3.84434 - 5.57990I$	0
$u = 0.893562 - 0.934702I$ $a = 0.675084 - 0.807292I$ $b = -1.44714 + 0.83277I$	$-3.84434 + 5.57990I$	0
$u = 0.893562 - 0.934702I$ $a = -0.572786 - 1.108320I$ $b = -0.666059 + 0.744407I$	$-3.84434 + 5.57990I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.696637+0.083139I$ $a=-0.38598+2.08102I$ $b=-0.75671-1.22228I$	$-9.32017+4.46189I$	$-9.18240-6.18854I$
$u=-0.696637+0.083139I$ $a=0.13988+2.55095I$ $b=0.724644-0.693230I$	$-9.32017+4.46189I$	$-9.18240-6.18854I$
$u=-0.696637-0.083139I$ $a=-0.38598-2.08102I$ $b=-0.75671+1.22228I$	$-9.32017-4.46189I$	$-9.18240+6.18854I$
$u=-0.696637-0.083139I$ $a=0.13988-2.55095I$ $b=0.724644+0.693230I$	$-9.32017-4.46189I$	$-9.18240+6.18854I$
$u=1.035270+0.785518I$ $a=-0.427877-1.081950I$ $b=1.20120+1.02676I$	$-5.05494-8.54364I$	0
$u=1.035270+0.785518I$ $a=0.369989-0.479615I$ $b=0.843940+0.550322I$	$-5.05494-8.54364I$	0
$u=1.035270-0.785518I$ $a=-0.427877+1.081950I$ $b=1.20120-1.02676I$	$-5.05494+8.54364I$	0
$u=1.035270-0.785518I$ $a=0.369989+0.479615I$ $b=0.843940-0.550322I$	$-5.05494+8.54364I$	0
$u=-1.018020+0.832767I$ $a=-0.641735-0.893634I$ $b=-0.793142+0.933931I$	$-8.7119+12.7975I$	0
$u=-1.018020+0.832767I$ $a=-0.510812+1.068150I$ $b=1.42717-1.23594I$	$-8.7119+12.7975I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.018020-0.832767I$ $a=-0.641735+0.893634I$ $b=-0.793142-0.933931I$	$-8.7119-12.7975I$	0
$u=-1.018020-0.832767I$ $a=-0.510812-1.068150I$ $b=\ \ 1.42717+1.23594I$	$-8.7119-12.7975I$	0
$u=-0.657897+0.088992I$ $a=\ \ 0.017199+0.837005I$ $b=-0.89379-1.50457I$	$-4.50270-2.59075I$	$-19.4386+1.2249I$
$u=-0.657897+0.088992I$ $a=\ \ 0.39424+2.06513I$ $b=\ \ 0.636115+0.361177I$	$-4.50270-2.59075I$	$-19.4386+1.2249I$
$u=-0.657897-0.088992I$ $a=\ \ 0.017199-0.837005I$ $b=-0.89379+1.50457I$	$-4.50270+2.59075I$	$-19.4386-1.2249I$
$u=-0.657897-0.088992I$ $a=\ \ 0.39424-2.06513I$ $b=\ \ 0.636115-0.361177I$	$-4.50270+2.59075I$	$-19.4386-1.2249I$
$u=\ \ 0.583420+0.267930I$ $a=-0.89169-2.24870I$ $b=\ \ 1.44798+2.22650I$	$-11.83730-3.27693I$	$-25.8812+12.8282I$
$u=\ \ 0.583420+0.267930I$ $a=\ \ 3.16646+2.07425I$ $b=\ \ 0.330498+0.136093I$	$-11.83730-3.27693I$	$-25.8812+12.8282I$
$u=\ \ 0.583420-0.267930I$ $a=-0.89169+2.24870I$ $b=\ \ 1.44798-2.22650I$	$-11.83730+3.27693I$	$-25.8812-12.8282I$
$u=\ \ 0.583420-0.267930I$ $a=\ \ 3.16646-2.07425I$ $b=\ \ 0.330498-0.136093I$	$-11.83730+3.27693I$	$-25.8812-12.8282I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.189460+0.720703I$ $a=-0.342957+0.868597I$ $b=\ \ 1.49856-0.98638I$	$-6.57943+6.00487I$	0
$u=-1.189460+0.720703I$ $a=\ \ 0.000576-0.924742I$ $b=-1.28965+0.97295I$	$-6.57943+6.00487I$	0
$u=-1.189460-0.720703I$ $a=-0.342957-0.868597I$ $b=\ \ 1.49856+0.98638I$	$-6.57943-6.00487I$	0
$u=-1.189460-0.720703I$ $a=\ \ 0.000576+0.924742I$ $b=-1.28965-0.97295I$	$-6.57943-6.00487I$	0
$u=-0.91731+1.09732I$ $a=-0.852335+0.500366I$ $b=\ \ 0.559482+0.183737I$	$-8.08661-5.91230I$	0
$u=-0.91731+1.09732I$ $a=\ \ 0.329713+0.566365I$ $b=-0.482043-0.948887I$	$-8.08661-5.91230I$	0
$u=-0.91731-1.09732I$ $a=-0.852335-0.500366I$ $b=\ \ 0.559482-0.183737I$	$-8.08661+5.91230I$	0
$u=-0.91731-1.09732I$ $a=\ \ 0.329713-0.566365I$ $b=-0.482043+0.948887I$	$-8.08661+5.91230I$	0
$u=\ \ 0.561900$ $a=\ \ 0.487602$ $b=-1.82901$	-5.64486	-23.3900
$u=\ \ 0.561900$ $a=-2.50131$ $b=-0.753739$	-5.64486	-23.3900

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.548044$ $a=\ \ 0.429754+0.773421I$ $b=-0.152143+0.937853I$	-1.13982	-4.25130
$u=-0.548044$ $a=\ \ 0.429754-0.773421I$ $b=-0.152143-0.937853I$	-1.13982	-4.25130
$u=\ \ 0.445877+0.176282I$ $a=-1.242670-0.380728I$ $b=-0.557235+0.677629I$	$-2.09096+1.40291I$	$-8.24032-3.30492I$
$u=\ \ 0.445877+0.176282I$ $a=\ \ 0.29370+1.92654I$ $b=-0.854876-0.184911I$	$-2.09096+1.40291I$	$-8.24032-3.30492I$
$u=\ \ 0.445877-0.176282I$ $a=-1.242670+0.380728I$ $b=-0.557235-0.677629I$	$-2.09096-1.40291I$	$-8.24032+3.30492I$
$u=\ \ 0.445877-0.176282I$ $a=\ \ 0.29370-1.92654I$ $b=-0.854876+0.184911I$	$-2.09096-1.40291I$	$-8.24032+3.30492I$
$u=\ \ 1.45834+0.86858I$ $a=\ \ 0.301924+0.656569I$ $b=-0.449909-0.349683I$	$-4.58536-1.70574I$	0
$u=\ \ 1.45834+0.86858I$ $a=\ \ 0.149226-0.360368I$ $b=-0.482370+0.319006I$	$-4.58536-1.70574I$	0
$u=\ \ 1.45834-0.86858I$ $a=\ \ 0.301924-0.656569I$ $b=-0.449909+0.349683I$	$-4.58536+1.70574I$	0
$u=\ \ 1.45834-0.86858I$ $a=\ \ 0.149226+0.360368I$ $b=-0.482370-0.319006I$	$-4.58536+1.70574I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.45290+0.90357I$ $a=-0.241091+0.942961I$ $b=\ \ 1.12508-1.07027I$	$-10.3029+12.4591I$	0
$u=-1.45290+0.90357I$ $a=\ \ 0.280567-0.799779I$ $b=-1.16931+0.98371I$	$-10.3029+12.4591I$	0
$u=-1.45290-0.90357I$ $a=-0.241091-0.942961I$ $b=\ \ 1.12508+1.07027I$	$-10.3029-12.4591I$	0
$u=-1.45290-0.90357I$ $a=\ \ 0.280567+0.799779I$ $b=-1.16931-0.98371I$	$-10.3029-12.4591I$	0
$u=\ \ 1.44959+1.07777I$ $a=-0.303287-0.856609I$ $b=\ \ 1.025880+0.730032I$	$-16.0808-5.1756I$	0
$u=\ \ 1.44959+1.07777I$ $a=-0.486979-0.609835I$ $b=\ \ 1.183880+0.595302I$	$-16.0808-5.1756I$	0
$u=\ \ 1.44959-1.07777I$ $a=-0.303287+0.856609I$ $b=\ \ 1.025880-0.730032I$	$-16.0808+5.1756I$	0
$u=\ \ 1.44959-1.07777I$ $a=-0.486979+0.609835I$ $b=\ \ 1.183880-0.595302I$	$-16.0808+5.1756I$	0
$u=\ \ 1.60371+0.84957I$ $a=-0.347412-0.536087I$ $b=\ \ 0.406139+0.501138I$	$-4.33700+1.31231I$	0
$u=\ \ 1.60371+0.84957I$ $a=\ \ 0.203144+0.145405I$ $b=\ \ 0.1238730-0.0061557I$	$-4.33700+1.31231I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.60371 - 0.84957I$ $a = -0.347412 + 0.536087I$ $b = 0.406139 - 0.501138I$	$-4.33700 - 1.31231I$	0
$u = 1.60371 - 0.84957I$ $a = 0.203144 - 0.145405I$ $b = 0.1238730 + 0.0061557I$	$-4.33700 - 1.31231I$	0
$u = -0.40398 + 1.82642I$ $a = -0.567135 + 0.240518I$ $b = 0.466392 + 0.038981I$	$-3.87819 + 1.02290I$	0
$u = -0.40398 + 1.82642I$ $a = 0.436284 + 0.048963I$ $b = -0.469784 - 0.296912I$	$-3.87819 + 1.02290I$	0
$u = -0.40398 - 1.82642I$ $a = -0.567135 - 0.240518I$ $b = 0.466392 - 0.038981I$	$-3.87819 - 1.02290I$	0
$u = -0.40398 - 1.82642I$ $a = 0.436284 - 0.048963I$ $b = -0.469784 + 0.296912I$	$-3.87819 - 1.02290I$	0
$u = -2.43992$ $a = -0.047502 + 0.506009I$ $b = 0.033693 - 0.857425I$	-6.96191	0
$u = -2.43992$ $a = -0.047502 - 0.506009I$ $b = 0.033693 + 0.857425I$	-6.96191	0

III. $I_3^u = \langle -32u^6 + 108u^5 + \cdots + 11b + 16,\ 96u^6 - 412u^5 + \cdots + 11a + 106,\ 4u^7 - 17u^6 + \cdots + 8u - 1 \rangle$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix} -8.72727u^6 + 37.4545u^5 + \cdots + 41.3636u - 9.63636 \\ 2.90909u^6 - 9.81818u^5 + \cdots + 0.545455u - 1.45455 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -5.81818u^6 + 27.6364u^5 + \cdots + 41.9091u - 11.0909 \\ 2.90909u^6 - 9.81818u^5 + \cdots + 0.545455u - 1.45455 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -9.09091u^6 + 33.1818u^5 + \cdots + 25.5455u - 6.45455 \\ -3.63636u^6 + 17.2727u^5 + \cdots + 16.8182u - 3.18182 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -13.0909u^6 + 54.1818u^5 + \cdots + 57.5455u - 14.4545 \\ -1.45455u^6 + 6.90909u^5 + \cdots + 10.7273u - 3.27273 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -6.18182u^6 + 27.3636u^5 + \cdots + 34.0909u - 8.90909 \\ 1.81818u^6 - 6.63636u^5 + \cdots + 4.09091u - 1.90909 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -7.27273u^6 + 30.5455u^5 + \cdots + 29.6364u - 6.36364 \\ -3.27273u^6 + 13.5455u^5 + \cdots + 10.6364u - 2.36364 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 7.63636u^6 - 30.2727u^5 + \cdots - 37.8182u + 11.1818 \\ 2.18182u^6 - 6.36364u^5 + \cdots - 4.09091u + 1.90909 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -10.1818u^6 + 40.3636u^5 + \cdots + 29.0909u - 4.90909 \\ 4u^5 - 13u^4 + 23u^3 - 23u^2 + 13u - 2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -13.8182u^6 + 57.6364u^5 + \cdots + 55.9091u - 13.0909 \\ -1.09091u^6 + 7.18182u^5 + \cdots + 15.5455u - 3.45455 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{192}{11}u^6 + \frac{780}{11}u^5 - \frac{1491}{11}u^4 + \frac{1680}{11}u^3 - 107u^2 + \frac{404}{11}u - \frac{124}{11}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{10}	$u^7 - 2u^6 + u^5 + 4u^4 - 3u^3 + u^2 + u - 4$
c_2, c_5	$u^7 + 2u^5 + u^4 + 2u^3 + u^2 + 1$
c_3, c_7	$2(2u^7 + 3u^6 - 5u^5 - 8u^4 + 4u^3 + 5u^2 - u - 1)$
c_4	$4(4u^7 - 17u^6 + 36u^5 - 48u^4 + 43u^3 - 24u^2 + 8u - 1)$
c_6, c_{11}	$2(2u^7 - 3u^6 - 5u^5 + 8u^4 + 4u^3 - 5u^2 - u + 1)$
c_8	$u^7 - 4u^5 - u^4 + 7u^3 + 11u^2 - u - 11$
c_9, c_{12}	$u^7 + 2u^5 - u^4 + 2u^3 - u^2 - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{10}	$y^7 - 2y^6 + 11y^5 - 16y^4 - 13y^3 + 25y^2 + 9y - 16$
c_2, c_5, c_9 c_{12}	$y^7 + 4y^6 + 8y^5 + 7y^4 + 2y^3 - 3y^2 - 2y - 1$
c_3, c_6, c_7 c_{11}	$4(4y^7 - 29y^6 + 89y^5 - 138y^4 + 112y^3 - 49y^2 + 11y - 1)$
c_4	$16(16y^7 - y^6 + 8y^5 + 40y^4 + 87y^3 + 16y^2 + 16y - 1)$
c_8	$y^7 - 8y^6 + 30y^5 - 59y^4 + 79y^3 - 157y^2 + 243y - 121$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.376823 + 1.074160I$ $a = -0.885548 - 0.766128I$ $b = 1.061330 - 0.160261I$	$-12.2106 - 9.4746I$	$-12.16424 + 5.63145I$
$u = 0.376823 - 1.074160I$ $a = -0.885548 + 0.766128I$ $b = 1.061330 + 0.160261I$	$-12.2106 + 9.4746I$	$-12.16424 - 5.63145I$
$u = 1.191480 + 0.572638I$ $a = 0.010755 + 0.841265I$ $b = -1.33777 - 1.26620I$	$-3.79534 - 6.00484I$	$-8.03203 - 1.33789I$
$u = 1.191480 - 0.572638I$ $a = 0.010755 - 0.841265I$ $b = -1.33777 + 1.26620I$	$-3.79534 + 6.00484I$	$-8.03203 + 1.33789I$
$u = 0.436244 + 0.517635I$ $a = 1.085950 + 0.158069I$ $b = -0.180490 + 0.953697I$	$-1.23694 + 1.46776I$	$-5.36065 - 3.82447I$
$u = 0.436244 - 0.517635I$ $a = 1.085950 - 0.158069I$ $b = -0.180490 - 0.953697I$	$-1.23694 - 1.46776I$	$-5.36065 + 3.82447I$
$u = 0.240914$ $a = -3.42230$ $b = -1.08615$	-4.99256	-6.90180

IV.

$\boldsymbol{I_4^u = \langle -8.15\times 10^6 a u^{18} - 2.35\times 10^8 u^{18} + \cdots + 8.15\times 10^6 a + 2.41\times 10^8,\ 7.78\times 10^6 a u^{18} + 1.72\times 10^8 u^{18} + \cdots + 9.29\times 10^7 a - 3.98\times 10^7,\ u^{19} + 5u^{18} + \cdots - 4u - 1\rangle}$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix} a \\ 0.200000au^{18} + 5.77127u^{18} + \cdots - 0.200000a - 5.90912 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.200000au^{18} + 5.77127u^{18} + \cdots + 0.800000a - 5.90912 \\ 0.200000au^{18} + 5.77127u^{18} + \cdots - 0.200000a - 5.90912 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -3.98404au^{18} - 15.3535u^{18} + \cdots + 0.955161a + 21.1082 \\ -1.78723au^{18} - 8.37699u^{18} + \cdots + 4.95396a + 23.7305 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 19.7857au^{18} + 28.0898u^{18} + \cdots - 32.4552a - 88.5857 \\ -1.93633au^{18} - 8.09924u^{18} + \cdots + 1.06391a + 8.30978 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0.200000au^{18} + 1.78723u^{18} + \cdots + 0.800000a - 4.95396 \\ 0.200000au^{18} + 3.44848u^{18} + \cdots - 0.200000a - 1.73491 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.779744au^{18} + 17.4898u^{18} + \cdots + 1.78723a - 21.3721 \\ -3.73304au^{18} - 16.3394u^{18} + \cdots + 3.44848a + 23.8214 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 10.7677au^{18} + 3.80821u^{18} + \cdots - 25.9144a - 42.9290 \\ -0.457859au^{18} + 8.60091u^{18} + \cdots + 4.20939a - 2.79683 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -3.68749au^{18} - 28.0981u^{18} + \cdots - 1.61108a + 44.5207 \\ 1.89463au^{18} + 10.4187u^{18} + \cdots + 0.313779a - 7.65781 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -5.77127au^{18} - 24.5662u^{18} + \cdots + 5.90912a + 50.7655 \\ -0.835697u^{18} - 4.33279u^{17} + \cdots + 11.2242u + 5.92680 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{32488608}{8148149}u^{18} - \frac{152731709}{8148149}u^{17} + \cdots + \frac{28904977}{8148149}u - \frac{7936733}{8148149}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{10}	$u^{38} - 6u^{37} + \cdots + u + 1$
c_2, c_5	$u^{38} + 19u^{36} + \cdots + 5u^2 + 1$
c_3, c_7	$u^{38} - 5u^{37} + \cdots - 12u^2 + 1$
c_4	$(u^{19} + 5u^{18} + \cdots - 4u - 1)^2$
c_6, c_{11}	$u^{38} + 5u^{37} + \cdots - 12u^2 + 1$
c_8	$(u^{19} + 7u^{18} + \cdots + u + 1)^2$
c_9, c_{12}	$u^{38} + 19u^{36} + \cdots + 5u^2 + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{10}	$y^{38} + 6y^{37} + \cdots - 19y + 1$
c_2, c_5, c_9 c_{12}	$y^{38} + 38y^{37} + \cdots + 10y + 1$
c_3, c_6, c_7 c_{11}	$y^{38} - 21y^{37} + \cdots - 24y + 1$
c_4	$(y^{19} - 15y^{18} + \cdots + 10y - 1)^2$
c_8	$(y^{19} - 3y^{18} + \cdots + 25y - 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.022190 + 0.280778I$ $a = 0.058058 + 0.917000I$ $b = -1.21944 - 1.44628I$	$-2.80024 - 4.61458I$	$-8.75408 + 7.60448I$
$u = 1.022190 + 0.280778I$ $a = -0.432107 - 0.143805I$ $b = -1.038550 - 0.867111I$	$-2.80024 - 4.61458I$	$-8.75408 + 7.60448I$
$u = 1.022190 - 0.280778I$ $a = 0.058058 - 0.917000I$ $b = -1.21944 + 1.44628I$	$-2.80024 + 4.61458I$	$-8.75408 - 7.60448I$
$u = 1.022190 - 0.280778I$ $a = -0.432107 + 0.143805I$ $b = -1.038550 + 0.867111I$	$-2.80024 + 4.61458I$	$-8.75408 - 7.60448I$
$u = -0.645543 + 0.674479I$ $a = 0.762389 - 0.359856I$ $b = 0.360780 - 0.060999I$	$-0.81056 + 2.89349I$	$-8.24729 - 5.80229I$
$u = -0.645543 + 0.674479I$ $a = 0.126801 - 1.263230I$ $b = -0.441195 + 1.029230I$	$-0.81056 + 2.89349I$	$-8.24729 - 5.80229I$
$u = -0.645543 - 0.674479I$ $a = 0.762389 + 0.359856I$ $b = 0.360780 + 0.060999I$	$-0.81056 - 2.89349I$	$-8.24729 + 5.80229I$
$u = -0.645543 - 0.674479I$ $a = 0.126801 + 1.263230I$ $b = -0.441195 - 1.029230I$	$-0.81056 - 2.89349I$	$-8.24729 + 5.80229I$
$u = -0.980359 + 0.430482I$ $a = 0.143993 - 1.027560I$ $b = -0.84004 + 1.54904I$	$-2.48401 + 1.41073I$	$-6.37558 - 0.35420I$
$u = -0.980359 + 0.430482I$ $a = 0.842135 - 0.198355I$ $b = 0.457888 - 0.810868I$	$-2.48401 + 1.41073I$	$-6.37558 - 0.35420I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.980359-0.430482I$ $a=\ \ 0.143993+1.027560I$ $b=-0.84004-1.54904I$	$-2.48401-1.41073I$	$-6.37558+0.35420I$
$u=-0.980359-0.430482I$ $a=\ \ 0.842135+0.198355I$ $b=\ \ 0.457888+0.810868I$	$-2.48401-1.41073I$	$-6.37558+0.35420I$
$u=\ \ 1.08265$ $a=\ \ 0.054854+0.583194I$ $b=-0.718519-0.303170I$	-2.62092	-11.6870
$u=\ \ 1.08265$ $a=\ \ 0.054854-0.583194I$ $b=-0.718519+0.303170I$	-2.62092	-11.6870
$u=\ \ 1.042780+0.722786I$ $a=\ \ 0.372943+0.813892I$ $b=-1.21279-0.91071I$	$-2.17064-4.68065I$	$-7.60800+5.98175I$
$u=\ \ 1.042780+0.722786I$ $a=-0.388710+0.662587I$ $b=-0.805790-0.707990I$	$-2.17064-4.68065I$	$-7.60800+5.98175I$
$u=\ \ 1.042780-0.722786I$ $a=\ \ 0.372943-0.813892I$ $b=-1.21279+0.91071I$	$-2.17064+4.68065I$	$-7.60800-5.98175I$
$u=\ \ 1.042780-0.722786I$ $a=-0.388710-0.662587I$ $b=-0.805790+0.707990I$	$-2.17064+4.68065I$	$-7.60800-5.98175I$
$u=\ \ 0.722137+0.071511I$ $a=-0.09406-2.16689I$ $b=\ \ 0.52482+1.76760I$	$-9.89636-4.19920I$	$-20.3643+1.5662I$
$u=\ \ 0.722137+0.071511I$ $a=\ \ 0.62012+2.61024I$ $b=\ \ 0.339619-0.257537I$	$-9.89636-4.19920I$	$-20.3643+1.5662I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.722137 - 0.071511I$ $a = -0.09406 + 2.16689I$ $b = 0.52482 - 1.76760I$	$-9.89636 + 4.19920I$	$-20.3643 - 1.5662I$
$u = 0.722137 - 0.071511I$ $a = 0.62012 - 2.61024I$ $b = 0.339619 + 0.257537I$	$-9.89636 + 4.19920I$	$-20.3643 - 1.5662I$
$u = -1.102000 + 0.671129I$ $a = -0.275360 + 1.031890I$ $b = 1.48926 - 0.90734I$	$-6.61725 + 8.28242I$	$-11.19023 - 5.79115I$
$u = -1.102000 + 0.671129I$ $a = 0.069748 - 0.677195I$ $b = -1.42131 + 0.67744I$	$-6.61725 + 8.28242I$	$-11.19023 - 5.79115I$
$u = -1.102000 - 0.671129I$ $a = -0.275360 - 1.031890I$ $b = 1.48926 + 0.90734I$	$-6.61725 - 8.28242I$	$-11.19023 + 5.79115I$
$u = -1.102000 - 0.671129I$ $a = 0.069748 + 0.677195I$ $b = -1.42131 - 0.67744I$	$-6.61725 - 8.28242I$	$-11.19023 + 5.79115I$
$u = -0.452222 + 0.324558I$ $a = -1.47160 + 2.41353I$ $b = 1.31431 - 1.60761I$	$-11.60330 + 3.04328I$	$-7.78934 + 3.92720I$
$u = -0.452222 + 0.324558I$ $a = -3.41177 + 1.38512I$ $b = -0.190438 - 0.415509I$	$-11.60330 + 3.04328I$	$-7.78934 + 3.92720I$
$u = -0.452222 - 0.324558I$ $a = -1.47160 - 2.41353I$ $b = 1.31431 + 1.60761I$	$-11.60330 - 3.04328I$	$-7.78934 - 3.92720I$
$u = -0.452222 - 0.324558I$ $a = -3.41177 - 1.38512I$ $b = -0.190438 + 0.415509I$	$-11.60330 - 3.04328I$	$-7.78934 - 3.92720I$

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.350920+0.367857I$ $a=-0.138762-0.584225I$ $b=-0.539677-1.109780I$	$-3.93412-2.87780I$	$-7.67100+5.09365I$
$u=-0.350920+0.367857I$ $a=-1.70800+1.92997I$ $b=0.861230+0.344894I$	$-3.93412-2.87780I$	$-7.67100+5.09365I$
$u=-0.350920-0.367857I$ $a=-0.138762+0.584225I$ $b=-0.539677+1.109780I$	$-3.93412+2.87780I$	$-7.67100-5.09365I$
$u=-0.350920-0.367857I$ $a=-1.70800-1.92997I$ $b=0.861230-0.344894I$	$-3.93412+2.87780I$	$-7.67100-5.09365I$
$u=-2.29739+1.41422I$ $a=-0.255506+0.333715I$ $b=0.394878-0.337359I$	$-4.43120-1.09421I$	$-21.6565-23.5514I$
$u=-2.29739+1.41422I$ $a=0.124837-0.175711I$ $b=-0.315038+0.205472I$	$-4.43120-1.09421I$	$-21.6565-23.5514I$
$u=-2.29739-1.41422I$ $a=-0.255506-0.333715I$ $b=0.394878+0.337359I$	$-4.43120+1.09421I$	$-21.6565+23.5514I$
$u=-2.29739-1.41422I$ $a=0.124837+0.175711I$ $b=-0.315038-0.205472I$	$-4.43120+1.09421I$	$-21.6565+23.5514I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_{10}	$(u^7-2u^6+\cdots+u-4)(u^{29}+2u^{27}+\cdots+13u+4)$ $\cdot(u^{38}-6u^{37}+\cdots+u+1)$
c_2, c_5	$(u^7+2u^5+u^4+2u^3+u^2+1)(u^{29}+13u^{27}+\cdots+3u+1)$ $\cdot(u^{38}+19u^{36}+\cdots+5u^2+1)$
c_3, c_7	$4(2u^7+3u^6+\cdots-u-1)(2u^{29}+u^{28}+\cdots-2u^2+1)$ $\cdot(u^{38}-5u^{37}+\cdots-12u^2+1)$
c_4	$16(4u^7-17u^6+36u^5-48u^4+43u^3-24u^2+8u-1)$ $\cdot((u^{19}+5u^{18}+\cdots-4u-1)^2)(4u^{29}-67u^{28}+\cdots-1032u+144)$
c_6, c_{11}	$4(2u^7-3u^6+\cdots-u+1)(2u^{29}+u^{28}+\cdots-2u^2+1)$ $\cdot(u^{38}+5u^{37}+\cdots-12u^2+1)$
c_8	$(u^7-4u^5+\cdots-u-11)(u^{19}+7u^{18}+\cdots+u+1)^2$ $\cdot(u^{29}-9u^{28}+\cdots-2794u+324)$
c_9, c_{12}	$(u^7+2u^5-u^4+2u^3-u^2-1)(u^{29}+13u^{27}+\cdots+3u+1)$ $\cdot(u^{38}+19u^{36}+\cdots+5u^2+1)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_{10}	$(y^7 - 2y^6 + 11y^5 - 16y^4 - 13y^3 + 25y^2 + 9y - 16)$ $\cdot (y^{29} + 4y^{28} + \cdots + 361y - 16)(y^{38} + 6y^{37} + \cdots - 19y + 1)$
c_2, c_5, c_9 c_{12}	$(y^7 + 4y^6 + \cdots - 2y - 1)(y^{29} + 26y^{28} + \cdots - y - 1)$ $\cdot (y^{38} + 38y^{37} + \cdots + 10y + 1)$
c_3, c_6, c_7 c_{11}	$16(4y^7 - 29y^6 + 89y^5 - 138y^4 + 112y^3 - 49y^2 + 11y - 1)$ $\cdot (4y^{29} - 69y^{28} + \cdots + 4y - 1)(y^{38} - 21y^{37} + \cdots - 24y + 1)$
c_4	$256(16y^7 - y^6 + 8y^5 + 40y^4 + 87y^3 + 16y^2 + 16y - 1)$ $\cdot (y^{19} - 15y^{18} + \cdots + 10y - 1)^2$ $\cdot (16y^{29} - 113y^{28} + \cdots + 197280y - 20736)$
c_8	$(y^7 - 8y^6 + 30y^5 - 59y^4 + 79y^3 - 157y^2 + 243y - 121)$ $\cdot ((y^{19} - 3y^{18} + \cdots + 25y - 1)^2)(y^{29} - 7y^{28} + \cdots + 371932y - 104976)$