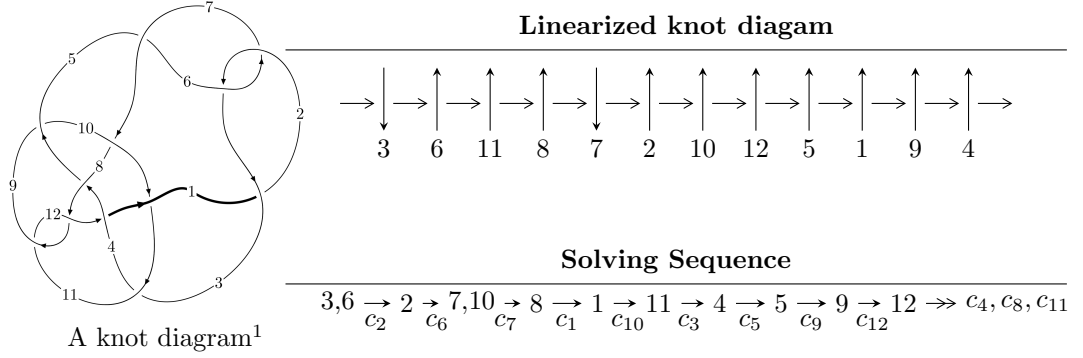


12a₀₄₇₂ (K12a₀₄₇₂)



Ideals for irreducible components² of X_{par}

$$\begin{aligned}
 I_1^u &= \langle -3.80673 \times 10^{16}u^{62} - 2.40994 \times 10^{17}u^{61} + \dots + 6.68228 \times 10^{14}b + 5.92854 \times 10^{17}, \\
 &\quad 5.92854 \times 10^{17}u^{62} + 6.30921 \times 10^{18}u^{61} + \dots + 6.68228 \times 10^{15}a + 9.39437 \times 10^{18}, \\
 &\quad u^{63} + 10u^{62} + \dots + 26u + 10 \rangle \\
 I_2^u &= \langle -u^{42} - 2u^{41} + \dots + 2b - 10, -10u^{42}a + 10u^{42} + \dots + 13a - 27, u^{43} - 3u^{42} + \dots + 5u^2 + 1 \rangle \\
 I_3^u &= \langle 2u^{22} + 16u^{21} + \dots + b + 31, -31u^{22} + 97u^{21} + \dots + 2a + 74, u^{23} - 3u^{22} + \dots - 2u + 2 \rangle \\
 I_4^u &= \langle a^3u - a^3 - a^2u + a^2 + 6au + 3b + 3a - u + 1, a^4 - 3a^2u - a^2 - 2au - 2a - 2u - 2, u^2 + u + 1 \rangle
 \end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 180 representations.

¹The 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>).

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

$$\mathbf{I. } I_1^u = \langle -3.81 \times 10^{16}u^{62} - 2.41 \times 10^{17}u^{61} + \dots + 6.68 \times 10^{14}b + 5.93 \times 10^{17}, 5.93 \times 10^{17}u^{62} + 6.31 \times 10^{18}u^{61} + \dots + 6.68 \times 10^{15}a + 9.39 \times 10^{18}, u^{63} + 10u^{62} + \dots + 26u + 10 \rangle$$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -88.7203u^{62} - 944.171u^{61} + \dots - 2753.65u - 1405.86 \\ 56.9675u^{62} + 360.646u^{61} + \dots - 900.864u - 887.203 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 19.0481u^{62} + 241.655u^{61} + \dots + 1061.36u + 631.264 \\ -51.1743u^{62} - 411.730u^{61} + \dots - 135.013u + 190.481 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -41.9861u^{62} - 384.463u^{61} + \dots - 676.460u - 233.296 \\ 11.6546u^{62} + 53.7990u^{61} + \dots - 419.518u - 348.043 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 36.7915u^{62} + 341.158u^{61} + \dots + 606.220u + 216.945 \\ 30.2923u^{62} + 321.272u^{61} + \dots + 973.954u + 507.932 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^3 \\ u^5 + u^3 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -51.9436u^{62} - 525.909u^{61} + \dots - 1320.98u - 613.500 \\ 27.9487u^{62} + 173.947u^{61} + \dots - 497.766u - 483.244 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -18.0981u^{62} - 158.934u^{61} + \dots - 263.436u - 62.0849 \\ 19.5842u^{62} + 181.155u^{61} + \dots + 283.762u + 67.1158 \end{pmatrix}$$

(ii) Obstruction class = -1

$$\mathbf{(iii) Cusp Shapes} = \frac{289193695666494042}{668227596996943}u^{62} + \frac{2659979644074475993}{668227596996943}u^{61} + \dots + \frac{4339716891634397392}{668227596996943}u + \frac{1553531502950905056}{668227596996943}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5	$u^{63} + 18u^{62} + \dots - 444u - 100$
c_2, c_6	$u^{63} - 10u^{62} + \dots + 26u - 10$
c_3, c_9	$u^{63} - u^{62} + \dots + 40u - 19$
c_4, c_{12}	$u^{63} + 3u^{62} + \dots + 6u - 1$
c_7, c_{10}	$u^{63} + 3u^{62} + \dots + 6u - 1$
c_8, c_{11}	$u^{63} + 15u^{62} + \dots - 1262u - 50$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5	$y^{63} + 58y^{62} + \dots + 948336y - 10000$
c_2, c_6	$y^{63} + 18y^{62} + \dots - 444y - 100$
c_3, c_9	$y^{63} - 17y^{62} + \dots + 8174y - 361$
c_4, c_{12}	$y^{63} + 51y^{62} + \dots - 106y - 1$
c_7, c_{10}	$y^{63} + 11y^{62} + \dots - 4y - 1$
c_8, c_{11}	$y^{63} + 31y^{62} + \dots + 249244y - 2500$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.214740 + 0.981355I$ $a = -0.198641 - 0.968427I$ $b = -0.907715 + 0.402897I$	$-7.36523 + 3.21246I$	0
$u = 0.214740 - 0.981355I$ $a = -0.198641 + 0.968427I$ $b = -0.907715 - 0.402897I$	$-7.36523 - 3.21246I$	0
$u = 0.374009 + 0.963149I$ $a = -0.568883 + 0.321223I$ $b = 0.522153 + 0.427779I$	$-6.48970 + 2.46067I$	0
$u = 0.374009 - 0.963149I$ $a = -0.568883 - 0.321223I$ $b = 0.522153 - 0.427779I$	$-6.48970 - 2.46067I$	0
$u = -0.299758 + 0.918244I$ $a = -0.445543 - 0.542182I$ $b = -0.631410 + 0.246594I$	$-1.73788 - 2.23954I$	0
$u = -0.299758 - 0.918244I$ $a = -0.445543 + 0.542182I$ $b = -0.631410 - 0.246594I$	$-1.73788 + 2.23954I$	0
$u = 0.155216 + 1.032550I$ $a = 0.281341 - 0.492123I$ $b = -0.551808 - 0.214112I$	$-3.10710 - 1.65886I$	0
$u = 0.155216 - 1.032550I$ $a = 0.281341 + 0.492123I$ $b = -0.551808 + 0.214112I$	$-3.10710 + 1.65886I$	0
$u = -0.614389 + 0.883223I$ $a = -1.400550 + 0.059590I$ $b = -0.80785 + 1.27361I$	$-1.53239 - 1.91777I$	0
$u = -0.614389 - 0.883223I$ $a = -1.400550 - 0.059590I$ $b = -0.80785 - 1.27361I$	$-1.53239 + 1.91777I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.672802 + 0.858411I$ $a = -0.13281 + 2.03041I$ $b = 1.65357 + 1.48007I$	$-1.46510 - 3.14067I$	0
$u = -0.672802 - 0.858411I$ $a = -0.13281 - 2.03041I$ $b = 1.65357 - 1.48007I$	$-1.46510 + 3.14067I$	0
$u = 0.331456 + 1.046790I$ $a = 0.081594 + 0.703396I$ $b = 0.709261 - 0.318557I$	$-2.13998 + 8.18690I$	0
$u = 0.331456 - 1.046790I$ $a = 0.081594 - 0.703396I$ $b = 0.709261 + 0.318557I$	$-2.13998 - 8.18690I$	0
$u = -0.808939 + 0.780802I$ $a = 1.92700 - 1.48246I$ $b = 0.40132 - 2.70383I$	$-0.78075 + 1.95102I$	0
$u = -0.808939 - 0.780802I$ $a = 1.92700 + 1.48246I$ $b = 0.40132 + 2.70383I$	$-0.78075 - 1.95102I$	0
$u = 0.759333 + 0.855848I$ $a = -0.502843 + 0.116993I$ $b = 0.481953 + 0.341521I$	$0.04511 + 2.18210I$	0
$u = 0.759333 - 0.855848I$ $a = -0.502843 - 0.116993I$ $b = 0.481953 - 0.341521I$	$0.04511 - 2.18210I$	0
$u = -0.727325 + 0.884801I$ $a = 0.763795 - 1.130980I$ $b = -0.44517 - 1.49840I$	$1.42954 - 2.77384I$	0
$u = -0.727325 - 0.884801I$ $a = 0.763795 + 1.130980I$ $b = -0.44517 + 1.49840I$	$1.42954 + 2.77384I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.853913 + 0.026260I$ $a = 0.370194 - 0.372331I$ $b = -0.325891 + 0.308217I$	$-1.93762 - 9.98185I$	$9.09483 + 8.24986I$
$u = 0.853913 - 0.026260I$ $a = 0.370194 + 0.372331I$ $b = -0.325891 - 0.308217I$	$-1.93762 + 9.98185I$	$9.09483 - 8.24986I$
$u = 0.801890 + 0.834128I$ $a = 0.308206 + 0.027141I$ $b = -0.224509 - 0.278848I$	$4.73234 + 0.06850I$	0
$u = 0.801890 - 0.834128I$ $a = 0.308206 - 0.027141I$ $b = -0.224509 + 0.278848I$	$4.73234 - 0.06850I$	0
$u = 0.312772 + 1.116420I$ $a = -0.196189 - 0.623579I$ $b = -0.634813 + 0.414067I$	$-5.6358 + 13.9214I$	0
$u = 0.312772 - 1.116420I$ $a = -0.196189 + 0.623579I$ $b = -0.634813 - 0.414067I$	$-5.6358 - 13.9214I$	0
$u = 0.750040 + 0.901778I$ $a = 0.494648 - 0.088629I$ $b = -0.450930 - 0.379587I$	$-0.09708 + 3.53530I$	0
$u = 0.750040 - 0.901778I$ $a = 0.494648 + 0.088629I$ $b = -0.450930 + 0.379587I$	$-0.09708 - 3.53530I$	0
$u = -0.909357 + 0.744981I$ $a = 1.56708 - 1.26561I$ $b = 0.48218 - 2.31833I$	$2.58456 + 13.51120I$	0
$u = -0.909357 - 0.744981I$ $a = 1.56708 + 1.26561I$ $b = 0.48218 + 2.31833I$	$2.58456 - 13.51120I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.889224 + 0.774811I$ $a = -1.73251 + 1.20374I$ $b = -0.60792 + 2.41277I$	$5.91502 + 7.07871I$	0
$u = -0.889224 - 0.774811I$ $a = -1.73251 - 1.20374I$ $b = -0.60792 - 2.41277I$	$5.91502 - 7.07871I$	0
$u = -0.789491 + 0.887359I$ $a = -1.86373 + 2.16612I$ $b = 0.45073 + 3.36393I$	$6.49065 - 2.96627I$	0
$u = -0.789491 - 0.887359I$ $a = -1.86373 - 2.16612I$ $b = 0.45073 - 3.36393I$	$6.49065 + 2.96627I$	0
$u = -0.060792 + 0.808859I$ $a = 0.00983 + 1.83287I$ $b = 1.48313 + 0.10347I$	$-4.73240 - 0.30264I$	$-1.49352 - 1.04651I$
$u = -0.060792 - 0.808859I$ $a = 0.00983 - 1.83287I$ $b = 1.48313 - 0.10347I$	$-4.73240 + 0.30264I$	$-1.49352 + 1.04651I$
$u = 0.237751 + 1.172820I$ $a = -0.278821 + 0.291131I$ $b = 0.407735 + 0.257790I$	$-6.11298 - 6.19823I$	0
$u = 0.237751 - 1.172820I$ $a = -0.278821 - 0.291131I$ $b = 0.407735 - 0.257790I$	$-6.11298 + 6.19823I$	0
$u = 0.777876 + 0.934212I$ $a = -0.269530 + 0.094125I$ $b = 0.297594 + 0.178580I$	$4.42574 + 5.86549I$	0
$u = 0.777876 - 0.934212I$ $a = -0.269530 - 0.094125I$ $b = 0.297594 - 0.178580I$	$4.42574 - 5.86549I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.024920 + 0.659196I$ $a = -0.041692 + 0.403727I$ $b = 0.223404 + 0.441270I$	$3.62951 - 0.41596I$	0
$u = -1.024920 - 0.659196I$ $a = -0.041692 - 0.403727I$ $b = 0.223404 - 0.441270I$	$3.62951 + 0.41596I$	0
$u = 0.759599 + 0.115751I$ $a = -0.292860 + 0.520785I$ $b = 0.282738 - 0.361689I$	$0.94173 - 4.42506I$	$11.22421 + 5.44391I$
$u = 0.759599 - 0.115751I$ $a = -0.292860 - 0.520785I$ $b = 0.282738 + 0.361689I$	$0.94173 + 4.42506I$	$11.22421 - 5.44391I$
$u = -0.760280 + 0.969470I$ $a = 1.16974 - 2.20422I$ $b = -1.24759 - 2.80985I$	$-1.35699 - 7.84774I$	0
$u = -0.760280 - 0.969470I$ $a = 1.16974 + 2.20422I$ $b = -1.24759 + 2.80985I$	$-1.35699 + 7.84774I$	0
$u = -0.980930 + 0.817644I$ $a = 0.335518 - 0.528614I$ $b = -0.103099 - 0.792868I$	$2.77195 - 5.58976I$	0
$u = -0.980930 - 0.817644I$ $a = 0.335518 + 0.528614I$ $b = -0.103099 + 0.792868I$	$2.77195 + 5.58976I$	0
$u = -0.795885 + 1.006870I$ $a = -0.91770 + 2.00486I$ $b = 1.28825 + 2.51964I$	$5.1873 - 13.3220I$	0
$u = -0.795885 - 1.006870I$ $a = -0.91770 - 2.00486I$ $b = 1.28825 - 2.51964I$	$5.1873 + 13.3220I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.790344 + 1.030120I$ $a = 0.98934 - 1.85454I$ $b = -1.12848 - 2.48487I$	$1.6897 - 19.7899I$	0
$u = -0.790344 - 1.030120I$ $a = 0.98934 + 1.85454I$ $b = -1.12848 + 2.48487I$	$1.6897 + 19.7899I$	0
$u = -0.870201 + 0.984922I$ $a = 0.220500 - 0.817351I$ $b = -0.613148 - 0.928435I$	$2.24309 - 1.13456I$	0
$u = -0.870201 - 0.984922I$ $a = 0.220500 + 0.817351I$ $b = -0.613148 + 0.928435I$	$2.24309 + 1.13456I$	0
$u = 0.173176 + 0.645739I$ $a = 0.47513 + 1.38049I$ $b = 0.809154 - 0.545880I$	$1.22423 + 0.85395I$	$16.1945 - 7.1055I$
$u = 0.173176 - 0.645739I$ $a = 0.47513 - 1.38049I$ $b = 0.809154 + 0.545880I$	$1.22423 - 0.85395I$	$16.1945 + 7.1055I$
$u = 0.014002 + 0.637337I$ $a = 1.03665 - 1.67059I$ $b = -1.079240 - 0.637303I$	$-3.97710 - 0.05932I$	$0.437467 - 0.012893I$
$u = 0.014002 - 0.637337I$ $a = 1.03665 + 1.67059I$ $b = -1.079240 + 0.637303I$	$-3.97710 + 0.05932I$	$0.437467 + 0.012893I$
$u = -0.863546 + 1.077970I$ $a = -0.093011 + 0.471833I$ $b = 0.428301 + 0.507712I$	$2.37403 - 6.43184I$	0
$u = -0.863546 - 1.077970I$ $a = -0.093011 - 0.471833I$ $b = 0.428301 - 0.507712I$	$2.37403 + 6.43184I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.523109 + 0.104957I$ $a = 0.882914 + 0.716754I$ $b = -0.386632 - 0.467608I$	$-4.19452 + 0.80312I$	$4.88532 - 2.02907I$
$u = 0.523109 - 0.104957I$ $a = 0.882914 - 0.716754I$ $b = -0.386632 + 0.467608I$	$-4.19452 - 0.80312I$	$4.88532 + 2.02907I$
$u = -0.361406$ $a = 1.24367$ $b = 0.449470$	0.796802	12.7800

$$\text{II. } I_2^u = \langle -u^{42} - 2u^{41} + \dots + 2b - 10, -10u^{42}a + 10u^{42} + \dots + 13a - 27, u^{43} - 3u^{42} + \dots + 5u^2 + 1 \rangle$$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} a \\ \frac{1}{2}u^{42} + u^{41} + \dots + \frac{13}{2}u + 5 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -\frac{3}{2}u^{42}a + 5u^{42} + \dots - \frac{5}{2}a + 8u \\ -u^{42}a + 2u^{42} + \dots + \frac{5}{2}a - 5 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 2u^{42} - \frac{9}{2}u^{41} + \dots + a + \frac{1}{2} \\ u^{42} - u^{41} + \dots + 5u + 3 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u^{42}a - \frac{3}{2}u^{42} + \dots + 4a - 1 \\ -\frac{3}{2}u^{42}a - \frac{1}{2}u^{42} + \dots + \frac{3}{2}a - \frac{5}{2} \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^3 \\ u^5 + u^3 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -\frac{1}{2}u^{42} + u^{41} + \dots + a - \frac{1}{2}u \\ \frac{1}{2}u^{42} + u^{41} + \dots + \frac{15}{2}u + 5 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -\frac{1}{2}u^{42}a + 5u^{42} + \dots + a - \frac{3}{2} \\ \frac{1}{2}u^{41}a + 2u^{42} + \dots + \frac{1}{2}a - 5 \end{pmatrix}$$

(ii) Obstruction class = -1

(iii) Cusp Shapes = $8u^{42} - u^{41} + \dots + 25u + 29$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5	$(u^{43} + 13u^{42} + \dots - 10u - 1)^2$
c_2, c_6	$(u^{43} + 3u^{42} + \dots - 5u^2 - 1)^2$
c_3, c_9	$u^{86} - u^{85} + \dots + 3792u + 428$
c_4, c_{12}	$u^{86} + 7u^{85} + \dots - 22u^2 + 4$
c_7, c_{10}	$u^{86} + 13u^{85} + \dots + 254u + 41$
c_8, c_{11}	$(u^{43} - 13u^{42} + \dots + 64u - 7)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5	$(y^{43} + 37y^{42} + \dots - 6y - 1)^2$
c_2, c_6	$(y^{43} + 13y^{42} + \dots - 10y - 1)^2$
c_3, c_9	$y^{86} - 11y^{85} + \dots - 363120y + 183184$
c_4, c_{12}	$y^{86} - 3y^{85} + \dots - 176y + 16$
c_7, c_{10}	$y^{86} - 37y^{85} + \dots - 1868y + 1681$
c_8, c_{11}	$(y^{43} + 27y^{42} + \dots - 888y - 49)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.323035 + 0.949615I$ $a = -0.305733 - 1.039300I$ $b = -0.1145460 - 0.0741797I$	$-1.83832 - 2.75171I$	$6.98850 + 5.21763I$
$u = -0.323035 + 0.949615I$ $a = 0.0332365 - 0.1319290I$ $b = -1.085700 - 0.045401I$	$-1.83832 - 2.75171I$	$6.98850 + 5.21763I$
$u = -0.323035 - 0.949615I$ $a = -0.305733 + 1.039300I$ $b = -0.1145460 + 0.0741797I$	$-1.83832 + 2.75171I$	$6.98850 - 5.21763I$
$u = -0.323035 - 0.949615I$ $a = 0.0332365 + 0.1319290I$ $b = -1.085700 + 0.045401I$	$-1.83832 + 2.75171I$	$6.98850 - 5.21763I$
$u = -0.091872 + 0.990497I$ $a = -0.232551 - 0.519417I$ $b = 1.15738 + 1.03644I$	$-6.33568 - 5.02013I$	$-3.92575 + 6.55418I$
$u = -0.091872 + 0.990497I$ $a = -0.93000 + 1.25475I$ $b = -0.535846 + 0.182621I$	$-6.33568 - 5.02013I$	$-3.92575 + 6.55418I$
$u = -0.091872 - 0.990497I$ $a = -0.232551 + 0.519417I$ $b = 1.15738 - 1.03644I$	$-6.33568 + 5.02013I$	$-3.92575 - 6.55418I$
$u = -0.091872 - 0.990497I$ $a = -0.93000 - 1.25475I$ $b = -0.535846 - 0.182621I$	$-6.33568 + 5.02013I$	$-3.92575 - 6.55418I$
$u = 0.739821 + 0.787237I$ $a = 1.68098 + 1.36113I$ $b = -0.05041 + 3.03780I$	$-0.97481 - 4.23095I$	$3.83240 + 4.84279I$
$u = 0.739821 + 0.787237I$ $a = -2.01715 - 1.95969I$ $b = -0.17210 - 2.33032I$	$-0.97481 - 4.23095I$	$3.83240 + 4.84279I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.739821 - 0.787237I$		
$a = 1.68098 - 1.36113I$	$-0.97481 + 4.23095I$	$3.83240 - 4.84279I$
$b = -0.05041 - 3.03780I$		
$u = 0.739821 - 0.787237I$		
$a = -2.01715 + 1.95969I$	$-0.97481 + 4.23095I$	$3.83240 - 4.84279I$
$b = -0.17210 + 2.33032I$		
$u = -0.342874 + 1.077160I$		
$a = -0.203407 - 0.452926I$	$-1.65593 - 2.52960I$	$9.51919 + 0.I$
$b = -0.087933 + 0.397175I$		
$u = -0.342874 + 1.077160I$		
$a = -0.358396 + 0.032448I$	$-1.65593 - 2.52960I$	$9.51919 + 0.I$
$b = -0.557616 + 0.063805I$		
$u = -0.342874 - 1.077160I$		
$a = -0.203407 + 0.452926I$	$-1.65593 + 2.52960I$	$9.51919 + 0.I$
$b = -0.087933 - 0.397175I$		
$u = -0.342874 - 1.077160I$		
$a = -0.358396 - 0.032448I$	$-1.65593 + 2.52960I$	$9.51919 + 0.I$
$b = -0.557616 - 0.063805I$		
$u = -0.565077 + 0.985749I$		
$a = 1.247950 + 0.602100I$	$-3.59470 - 0.66665I$	$2.14705 - 3.75657I$
$b = 0.629918 - 0.282683I$		
$u = -0.565077 + 0.985749I$		
$a = 0.491558 + 0.357241I$	$-3.59470 - 0.66665I$	$2.14705 - 3.75657I$
$b = 1.29871 - 0.88993I$		
$u = -0.565077 - 0.985749I$		
$a = 1.247950 - 0.602100I$	$-3.59470 + 0.66665I$	$2.14705 + 3.75657I$
$b = 0.629918 + 0.282683I$		
$u = -0.565077 - 0.985749I$		
$a = 0.491558 - 0.357241I$	$-3.59470 + 0.66665I$	$2.14705 + 3.75657I$
$b = 1.29871 + 0.88993I$		

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.256350 + 1.120110I$ $a = 0.528261 - 0.413033I$ $b = 0.369713 + 0.056353I$	$-2.22771 - 4.80617I$	$6.22768 + 9.91357I$
$u = -0.256350 + 1.120110I$ $a = 0.023974 + 0.324581I$ $b = -0.327223 - 0.697593I$	$-2.22771 - 4.80617I$	$6.22768 + 9.91357I$
$u = -0.256350 - 1.120110I$ $a = 0.528261 + 0.413033I$ $b = 0.369713 - 0.056353I$	$-2.22771 + 4.80617I$	$6.22768 - 9.91357I$
$u = -0.256350 - 1.120110I$ $a = 0.023974 - 0.324581I$ $b = -0.327223 + 0.697593I$	$-2.22771 + 4.80617I$	$6.22768 - 9.91357I$
$u = 0.896191 + 0.726671I$ $a = -1.02821 - 1.23957I$ $b = 0.20032 - 1.87312I$	$5.59018 - 4.65193I$	$9.92416 + 5.53660I$
$u = 0.896191 + 0.726671I$ $a = 0.88763 + 1.37036I$ $b = 0.02071 + 1.85806I$	$5.59018 - 4.65193I$	$9.92416 + 5.53660I$
$u = 0.896191 - 0.726671I$ $a = -1.02821 + 1.23957I$ $b = 0.20032 + 1.87312I$	$5.59018 + 4.65193I$	$9.92416 - 5.53660I$
$u = 0.896191 - 0.726671I$ $a = 0.88763 - 1.37036I$ $b = 0.02071 - 1.85806I$	$5.59018 + 4.65193I$	$9.92416 - 5.53660I$
$u = -0.793285 + 0.848083I$ $a = 1.07612 - 1.97315I$ $b = -1.65131 - 2.24924I$	$2.41446 + 3.65599I$	$11.80708 - 4.68849I$
$u = -0.793285 + 0.848083I$ $a = 0.44313 - 2.36161I$ $b = -0.81972 - 2.47790I$	$2.41446 + 3.65599I$	$11.80708 - 4.68849I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.793285 - 0.848083I$ $a = 1.07612 + 1.97315I$ $b = -1.65131 + 2.24924I$	$2.41446 - 3.65599I$	$11.80708 + 4.68849I$
$u = -0.793285 - 0.848083I$ $a = 0.44313 + 2.36161I$ $b = -0.81972 + 2.47790I$	$2.41446 - 3.65599I$	$11.80708 + 4.68849I$
$u = 0.885942 + 0.767111I$ $a = -0.92178 - 1.18682I$ $b = -0.04857 - 1.92281I$	$6.42524 - 1.55212I$	$12.05674 - 2.71355I$
$u = 0.885942 + 0.767111I$ $a = 1.10535 + 1.21326I$ $b = -0.09378 + 1.75857I$	$6.42524 - 1.55212I$	$12.05674 - 2.71355I$
$u = 0.885942 - 0.767111I$ $a = -0.92178 + 1.18682I$ $b = -0.04857 + 1.92281I$	$6.42524 + 1.55212I$	$12.05674 + 2.71355I$
$u = 0.885942 - 0.767111I$ $a = 1.10535 - 1.21326I$ $b = -0.09378 - 1.75857I$	$6.42524 + 1.55212I$	$12.05674 + 2.71355I$
$u = 0.807879 + 0.851105I$ $a = -1.056100 - 0.345478I$ $b = -0.88633 - 1.75520I$	$5.04577 - 0.03073I$	$13.58291 + 2.30701I$
$u = 0.807879 + 0.851105I$ $a = 1.60482 + 0.48193I$ $b = 0.559166 + 1.177960I$	$5.04577 - 0.03073I$	$13.58291 + 2.30701I$
$u = 0.807879 - 0.851105I$ $a = -1.056100 + 0.345478I$ $b = -0.88633 + 1.75520I$	$5.04577 + 0.03073I$	$13.58291 - 2.30701I$
$u = 0.807879 - 0.851105I$ $a = 1.60482 - 0.48193I$ $b = 0.559166 - 1.177960I$	$5.04577 + 0.03073I$	$13.58291 - 2.30701I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.786587 + 0.886293I$ $a = -1.54721 + 1.96520I$ $b = 0.25619 + 3.15327I$	$6.43534 - 2.95705I$	$17.6456 + 3.0987I$
$u = -0.786587 + 0.886293I$ $a = -1.84671 + 1.92801I$ $b = 0.52473 + 2.91708I$	$6.43534 - 2.95705I$	$17.6456 + 3.0987I$
$u = -0.786587 - 0.886293I$ $a = -1.54721 - 1.96520I$ $b = 0.25619 - 3.15327I$	$6.43534 + 2.95705I$	$17.6456 - 3.0987I$
$u = -0.786587 - 0.886293I$ $a = -1.84671 - 1.92801I$ $b = 0.52473 - 2.91708I$	$6.43534 + 2.95705I$	$17.6456 - 3.0987I$
$u = 0.721618 + 0.950666I$ $a = 1.29262 + 1.80104I$ $b = -1.34513 + 2.86513I$	$-1.47785 + 9.80971I$	$2.51790 - 9.94937I$
$u = 0.721618 + 0.950666I$ $a = -1.23069 - 2.34911I$ $b = 0.77941 - 2.52851I$	$-1.47785 + 9.80971I$	$2.51790 - 9.94937I$
$u = 0.721618 - 0.950666I$ $a = 1.29262 - 1.80104I$ $b = -1.34513 - 2.86513I$	$-1.47785 - 9.80971I$	$2.51790 + 9.94937I$
$u = 0.721618 - 0.950666I$ $a = -1.23069 + 2.34911I$ $b = 0.77941 + 2.52851I$	$-1.47785 - 9.80971I$	$2.51790 + 9.94937I$
$u = -0.773961 + 0.919138I$ $a = 1.70419 - 0.97518I$ $b = 0.82661 - 3.09459I$	$2.19459 - 9.55035I$	$10.9381 + 10.4566I$
$u = -0.773961 + 0.919138I$ $a = 2.41311 - 1.13263I$ $b = 0.42265 - 2.32113I$	$2.19459 - 9.55035I$	$10.9381 + 10.4566I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.773961 - 0.919138I$ $a = 1.70419 + 0.97518I$ $b = 0.82661 + 3.09459I$	$2.19459 + 9.55035I$	$10.9381 - 10.4566I$
$u = -0.773961 - 0.919138I$ $a = 2.41311 + 1.13263I$ $b = 0.42265 + 2.32113I$	$2.19459 + 9.55035I$	$10.9381 - 10.4566I$
$u = -0.793556 + 0.052977I$ $a = 0.550459 + 0.332904I$ $b = -0.174247 + 0.309451I$	$1.71199 - 1.31703I$	$12.47852 + 5.06743I$
$u = -0.793556 + 0.052977I$ $a = -0.244520 + 0.373631I$ $b = 0.454456 + 0.235016I$	$1.71199 - 1.31703I$	$12.47852 + 5.06743I$
$u = -0.793556 - 0.052977I$ $a = 0.550459 - 0.332904I$ $b = -0.174247 - 0.309451I$	$1.71199 + 1.31703I$	$12.47852 - 5.06743I$
$u = -0.793556 - 0.052977I$ $a = -0.244520 - 0.373631I$ $b = 0.454456 - 0.235016I$	$1.71199 + 1.31703I$	$12.47852 - 5.06743I$
$u = 0.176280 + 0.773928I$ $a = -1.96350 + 0.35319I$ $b = -1.61112 + 0.19021I$	$-3.31097 + 6.48927I$	$3.69481 - 12.91170I$
$u = 0.176280 + 0.773928I$ $a = 0.21713 - 2.03228I$ $b = 0.61947 + 1.45735I$	$-3.31097 + 6.48927I$	$3.69481 - 12.91170I$
$u = 0.176280 - 0.773928I$ $a = -1.96350 - 0.35319I$ $b = -1.61112 - 0.19021I$	$-3.31097 - 6.48927I$	$3.69481 + 12.91170I$
$u = 0.176280 - 0.773928I$ $a = 0.21713 + 2.03228I$ $b = 0.61947 - 1.45735I$	$-3.31097 - 6.48927I$	$3.69481 + 12.91170I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.791116 + 0.922390I$ $a = -0.395948 - 1.336240I$ $b = 1.52108 - 1.19322I$	$4.82859 + 6.02228I$	$12.9867 - 7.5602I$
$u = 0.791116 + 0.922390I$ $a = -0.06958 + 1.58939I$ $b = -0.91929 + 1.42234I$	$4.82859 + 6.02228I$	$12.9867 - 7.5602I$
$u = 0.791116 - 0.922390I$ $a = -0.395948 + 1.336240I$ $b = 1.52108 + 1.19322I$	$4.82859 - 6.02228I$	$12.9867 + 7.5602I$
$u = 0.791116 - 0.922390I$ $a = -0.06958 - 1.58939I$ $b = -0.91929 - 1.42234I$	$4.82859 - 6.02228I$	$12.9867 + 7.5602I$
$u = -0.566403 + 0.479582I$ $a = 0.134814 - 1.062890I$ $b = -1.216450 - 0.079802I$	$-2.22867 - 3.83566I$	$7.39858 + 6.32192I$
$u = -0.566403 + 0.479582I$ $a = -1.18140 - 1.14120I$ $b = -0.433382 - 0.666676I$	$-2.22867 - 3.83566I$	$7.39858 + 6.32192I$
$u = -0.566403 - 0.479582I$ $a = 0.134814 + 1.062890I$ $b = -1.216450 + 0.079802I$	$-2.22867 + 3.83566I$	$7.39858 - 6.32192I$
$u = -0.566403 - 0.479582I$ $a = -1.18140 + 1.14120I$ $b = -0.433382 + 0.666676I$	$-2.22867 + 3.83566I$	$7.39858 - 6.32192I$
$u = 0.790913 + 1.007680I$ $a = 0.87613 + 1.35790I$ $b = -0.48564 + 2.06332I$	$5.67328 + 7.76664I$	$10.93736 + 0.I$
$u = 0.790913 + 1.007680I$ $a = -1.03297 - 1.29270I$ $b = 0.67538 - 1.95684I$	$5.67328 + 7.76664I$	$10.93736 + 0.I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.790913 - 1.007680I$ $a = 0.87613 - 1.35790I$ $b = -0.48564 - 2.06332I$	$5.67328 - 7.76664I$	$10.93736 + 0.I$
$u = 0.790913 - 1.007680I$ $a = -1.03297 + 1.29270I$ $b = 0.67538 + 1.95684I$	$5.67328 - 7.76664I$	$10.93736 + 0.I$
$u = 0.776568 + 1.032810I$ $a = -1.00416 - 1.23001I$ $b = 0.46269 - 2.21453I$	$4.63664 + 10.84510I$	$8.12291 - 10.36635I$
$u = 0.776568 + 1.032810I$ $a = 1.15459 + 1.31612I$ $b = -0.49056 + 1.99229I$	$4.63664 + 10.84510I$	$8.12291 - 10.36635I$
$u = 0.776568 - 1.032810I$ $a = -1.00416 + 1.23001I$ $b = 0.46269 + 2.21453I$	$4.63664 - 10.84510I$	$8.12291 + 10.36635I$
$u = 0.776568 - 1.032810I$ $a = 1.15459 - 1.31612I$ $b = -0.49056 - 1.99229I$	$4.63664 - 10.84510I$	$8.12291 + 10.36635I$
$u = 0.169504 + 0.639073I$ $a = 0.812914 + 0.955943I$ $b = 1.041210 - 0.436850I$	$1.23160 + 0.84425I$	$13.1500 - 7.6309I$
$u = 0.169504 + 0.639073I$ $a = 0.23491 + 1.69155I$ $b = 0.473124 - 0.681548I$	$1.23160 + 0.84425I$	$13.1500 - 7.6309I$
$u = 0.169504 - 0.639073I$ $a = 0.812914 - 0.955943I$ $b = 1.041210 + 0.436850I$	$1.23160 - 0.84425I$	$13.1500 + 7.6309I$
$u = 0.169504 - 0.639073I$ $a = 0.23491 - 1.69155I$ $b = 0.473124 + 0.681548I$	$1.23160 - 0.84425I$	$13.1500 + 7.6309I$

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.266359 + 0.394303I$ $a = 1.36711 + 0.40142I$ $b = -1.07616 + 1.07795I$	$-2.30554 - 4.60567I$	$9.13016 + 0.94164I$
$u = 0.266359 + 0.394303I$ $a = -0.61123 - 3.14216I$ $b = -0.205863 - 0.645978I$	$-2.30554 - 4.60567I$	$9.13016 + 0.94164I$
$u = 0.266359 - 0.394303I$ $a = 1.36711 - 0.40142I$ $b = -1.07616 - 1.07795I$	$-2.30554 + 4.60567I$	$9.13016 - 0.94164I$
$u = 0.266359 - 0.394303I$ $a = -0.61123 + 3.14216I$ $b = -0.205863 + 0.645978I$	$-2.30554 + 4.60567I$	$9.13016 - 0.94164I$
$u = -0.458382$ $a = 1.30025 + 0.61928I$ $b = 0.596012 - 0.283867I$	0.648314	11.6790
$u = -0.458382$ $a = 1.30025 - 0.61928I$ $b = 0.596012 + 0.283867I$	0.648314	11.6790

$$\text{III. } I_3^u = \langle 2u^{22} + 16u^{21} + \cdots + b + 31, -31u^{22} + 97u^{21} + \cdots + 2a + 74, u^{23} - 3u^{22} + \cdots - 2u + 2 \rangle$$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} \frac{31}{2}u^{22} - \frac{97}{2}u^{21} + \cdots + \frac{55}{2}u - 37 \\ -2u^{22} - 16u^{21} + \cdots - 6u - 31 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} \frac{5}{2}u^{22} - \frac{13}{2}u^{21} + \cdots - \frac{3}{2}u - 2 \\ u^{22} - 6u^{21} + \cdots + 4u - 5 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^2 + 1 \\ u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} \frac{9}{2}u^{22} - \frac{21}{2}u^{21} + \cdots + \frac{37}{2}u - 6 \\ -u^{22} - 3u^{21} + \cdots - 4u - 9 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -\frac{3}{2}u^{22} - \frac{1}{2}u^{21} + \cdots - \frac{5}{2}u - 9 \\ -5u^{22} + 11u^{21} + \cdots - 12u + 3 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^3 \\ u^5 + u^3 + u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} \frac{17}{2}u^{22} - \frac{51}{2}u^{21} + \cdots + \frac{43}{2}u - 19 \\ -u^{22} - 6u^{21} + \cdots - 5u - 15 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -\frac{11}{2}u^{22} + \frac{31}{2}u^{21} + \cdots - \frac{1}{2}u + 17 \\ -u^{22} + 9u^{21} + \cdots + 5u + 11 \end{pmatrix}$$

(ii) Obstruction class = 1

(iii) Cusp Shapes

$$= 19u^{22} - 39u^{21} + 95u^{20} - 123u^{19} + 258u^{18} - 325u^{17} + 545u^{16} - 611u^{15} + 876u^{14} - 844u^{13} + 989u^{12} - 891u^{11} + 978u^{10} - 825u^9 + 677u^8 - 431u^7 + 117u^6 + 5u^5 - 124u^4 + 17u^3 - 61u^2 - 12u - 6$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5	$u^{23} - 7u^{22} + \dots - 40u + 4$
c_2	$u^{23} - 3u^{22} + \dots - 2u + 2$
c_3, c_9	$u^{23} + u^{22} + \dots + u - 1$
c_4, c_{12}	$u^{23} - u^{22} + \dots + u + 1$
c_6	$u^{23} + 3u^{22} + \dots - 2u - 2$
c_7, c_{10}	$u^{23} + 3u^{22} + \dots + 3u + 1$
c_8	$u^{23} + 12u^{22} + \dots + 14u + 2$
c_{11}	$u^{23} - 12u^{22} + \dots + 14u - 2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_5	$y^{23} + 23y^{22} + \dots + 344y - 16$
c_2, c_6	$y^{23} + 7y^{22} + \dots - 40y - 4$
c_3, c_9	$y^{23} + 5y^{22} + \dots + 5y - 1$
c_4, c_{12}	$y^{23} + y^{22} + \dots - 11y - 1$
c_7, c_{10}	$y^{23} - 23y^{22} + \dots - y - 1$
c_8, c_{11}	$y^{23} + 8y^{22} + \dots - 40y - 4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.025871 + 0.973165I$ $a = -0.760524 + 0.437098I$ $b = -0.405692 - 0.751424I$	$-4.65064 - 5.18441I$	$2.33079 + 6.09871I$
$u = -0.025871 - 0.973165I$ $a = -0.760524 - 0.437098I$ $b = -0.405692 + 0.751424I$	$-4.65064 + 5.18441I$	$2.33079 - 6.09871I$
$u = 0.763648 + 0.815236I$ $a = 1.69106 + 2.27058I$ $b = -0.55968 + 3.11254I$	$0.42663 - 3.86713I$	$9.53924 + 3.55681I$
$u = 0.763648 - 0.815236I$ $a = 1.69106 - 2.27058I$ $b = -0.55968 - 3.11254I$	$0.42663 + 3.86713I$	$9.53924 - 3.55681I$
$u = -0.893491 + 0.723489I$ $a = 0.111494 - 0.110353I$ $b = -0.019779 + 0.179264I$	$3.30662 - 0.43365I$	$4.72127 + 2.90108I$
$u = -0.893491 - 0.723489I$ $a = 0.111494 + 0.110353I$ $b = -0.019779 - 0.179264I$	$3.30662 + 0.43365I$	$4.72127 - 2.90108I$
$u = 0.897988 + 0.736480I$ $a = -0.92790 - 1.14453I$ $b = 0.00969 - 1.71115I$	$6.11887 - 3.02218I$	$11.28015 + 2.57160I$
$u = 0.897988 - 0.736480I$ $a = -0.92790 + 1.14453I$ $b = 0.00969 + 1.71115I$	$6.11887 + 3.02218I$	$11.28015 - 2.57160I$
$u = 0.787391 + 0.887240I$ $a = -2.04262 - 2.34200I$ $b = 0.46958 - 3.65636I$	$6.16620 + 2.96007I$	$-3.29941 - 2.46884I$
$u = 0.787391 - 0.887240I$ $a = -2.04262 + 2.34200I$ $b = 0.46958 + 3.65636I$	$6.16620 - 2.96007I$	$-3.29941 + 2.46884I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.738399 + 0.938389I$ $a = 1.89751 + 1.88475I$ $b = -0.36751 + 3.17230I$	$0.04450 + 9.56439I$	$8.51705 - 9.18606I$
$u = 0.738399 - 0.938389I$ $a = 1.89751 - 1.88475I$ $b = -0.36751 - 3.17230I$	$0.04450 - 9.56439I$	$8.51705 + 9.18606I$
$u = -0.281462 + 1.168440I$ $a = 0.144819 - 0.258843I$ $b = 0.261682 + 0.242067I$	$-1.89882 - 3.14823I$	$4.29644 + 12.69111I$
$u = -0.281462 - 1.168440I$ $a = 0.144819 + 0.258843I$ $b = 0.261682 - 0.242067I$	$-1.89882 + 3.14823I$	$4.29644 - 12.69111I$
$u = 0.783737 + 1.029120I$ $a = -0.90426 - 1.23509I$ $b = 0.56235 - 1.89858I$	$5.20804 + 9.24588I$	$9.35025 - 7.12522I$
$u = 0.783737 - 1.029120I$ $a = -0.90426 + 1.23509I$ $b = 0.56235 + 1.89858I$	$5.20804 - 9.24588I$	$9.35025 + 7.12522I$
$u = -0.148922 + 0.683948I$ $a = 0.73742 - 1.50721I$ $b = 0.921033 + 0.728812I$	$0.982707 - 0.713406I$	$-9.22895 - 7.07138I$
$u = -0.148922 - 0.683948I$ $a = 0.73742 + 1.50721I$ $b = 0.921033 - 0.728812I$	$0.982707 + 0.713406I$	$-9.22895 + 7.07138I$
$u = -0.891738 + 0.976440I$ $a = -0.1073690 + 0.0025588I$ $b = 0.093247 - 0.107122I$	$2.58814 - 6.15897I$	$15.8924 + 5.4864I$
$u = -0.891738 - 0.976440I$ $a = -0.1073690 - 0.0025588I$ $b = 0.093247 + 0.107122I$	$2.58814 + 6.15897I$	$15.8924 - 5.4864I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.612292$ $a = -0.622163$ $b = 0.380945$	2.35182	17.2520
$u = 0.076468 + 0.605851I$ $a = -1.52855 + 1.71413I$ $b = -1.155390 - 0.795000I$	$-3.01883 + 5.50758I$	$3.97465 - 4.72679I$
$u = 0.076468 - 0.605851I$ $a = -1.52855 - 1.71413I$ $b = -1.155390 + 0.795000I$	$-3.01883 - 5.50758I$	$3.97465 + 4.72679I$

$$\text{IV. } I_4^u = \langle a^3u - a^3 - a^2u + a^2 + 6au + 3b + 3a - u + 1, a^4 - 3a^2u - a^2 - 2au - 2a - 2u - 2, u^2 + u + 1 \rangle$$

(i) Arc colorings

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

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

$$a_2 = \begin{pmatrix} 1 \\ -u - 1 \end{pmatrix}$$

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

$$a_{10} = \begin{pmatrix} a \\ -\frac{1}{3}a^3u + \frac{1}{3}a^2u + \cdots - a - \frac{1}{3} \end{pmatrix}$$

$$a_8 = \begin{pmatrix} \frac{2}{3}a^3u + \frac{1}{3}a^2u + \cdots + a + \frac{2}{3} \\ \frac{1}{3}a^3u - \frac{1}{3}a^2u + \cdots + \frac{1}{3}a^2 - \frac{2}{3} \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} -\frac{1}{3}a^3u + \frac{1}{3}a^2u + \cdots + a + \frac{2}{3} \\ -au \end{pmatrix}$$

$$a_4 = \begin{pmatrix} \frac{1}{3}a^3u + \frac{5}{3}a^2u + \cdots + a + \frac{7}{3} \\ a^2u + a^2 \end{pmatrix}$$

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

$$a_9 = \begin{pmatrix} \frac{1}{3}a^3u - \frac{1}{3}a^2u + \cdots + 2a + \frac{1}{3} \\ -\frac{1}{3}a^3u + \frac{1}{3}a^2u + \cdots - a - \frac{1}{3} \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -a^3 + a^2u + a^2 + 2au + 2a + 2u + 3 \\ \frac{1}{3}a^3u - \frac{1}{3}a^2u + \cdots + \frac{1}{3}a^2 - \frac{5}{3} \end{pmatrix}$$

(ii) Obstruction class = 1

(iii) Cusp Shapes = $4u + 4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_5, c_6	$(u^2 - u + 1)^4$
c_2	$(u^2 + u + 1)^4$
c_3, c_9	$u^8 - 5u^6 + 2u^5 + 11u^4 - 2u^3 - 6u^2 + 4u + 4$
c_4, c_{12}	$u^8 - 2u^7 + 7u^6 - 8u^5 + 15u^4 - 10u^3 + 10u^2 - 4u + 4$
c_7, c_8, c_{10} c_{11}	$(u^2 + 1)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5 c_6	$(y^2 + y + 1)^4$
c_3, c_9	$y^8 - 10y^7 + 47y^6 - 126y^5 + 197y^4 - 192y^3 + 140y^2 - 64y + 16$
c_4, c_{12}	$y^8 + 10y^7 + 47y^6 + 126y^5 + 197y^4 + 192y^3 + 140y^2 + 64y + 16$
c_7, c_8, c_{10} c_{11}	$(y + 1)^8$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.500000 + 0.866025I$ $a = -0.178142 + 0.892797I$ $b = 1.55014 + 0.10067I$	$-3.28987 - 2.02988I$	$2.00000 + 3.46410I$
$u = -0.500000 + 0.866025I$ $a = -0.603323 - 0.513523I$ $b = -1.61241 + 0.76573I$	$-3.28987 - 2.02988I$	$2.00000 + 3.46410I$
$u = -0.500000 + 0.866025I$ $a = -0.68788 - 1.39280I$ $b = -0.684114 - 0.600674I$	$-3.28987 - 2.02988I$	$2.00000 + 3.46410I$
$u = -0.500000 + 0.866025I$ $a = 1.46935 + 1.01352I$ $b = 0.746385 - 0.265732I$	$-3.28987 - 2.02988I$	$2.00000 + 3.46410I$
$u = -0.500000 - 0.866025I$ $a = -0.178142 - 0.892797I$ $b = 1.55014 - 0.10067I$	$-3.28987 + 2.02988I$	$2.00000 - 3.46410I$
$u = -0.500000 - 0.866025I$ $a = -0.603323 + 0.513523I$ $b = -1.61241 - 0.76573I$	$-3.28987 + 2.02988I$	$2.00000 - 3.46410I$
$u = -0.500000 - 0.866025I$ $a = -0.68788 + 1.39280I$ $b = -0.684114 + 0.600674I$	$-3.28987 + 2.02988I$	$2.00000 - 3.46410I$
$u = -0.500000 - 0.866025I$ $a = 1.46935 - 1.01352I$ $b = 0.746385 + 0.265732I$	$-3.28987 + 2.02988I$	$2.00000 - 3.46410I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_5	$((u^2 - u + 1)^4)(u^{23} - 7u^{22} + \dots - 40u + 4)$ $\cdot ((u^{43} + 13u^{42} + \dots - 10u - 1)^2)(u^{63} + 18u^{62} + \dots - 444u - 100)$
c_2	$((u^2 + u + 1)^4)(u^{23} - 3u^{22} + \dots - 2u + 2)(u^{43} + 3u^{42} + \dots - 5u^2 - 1)^2$ $\cdot (u^{63} - 10u^{62} + \dots + 26u - 10)$
c_3, c_9	$(u^8 - 5u^6 + \dots + 4u + 4)(u^{23} + u^{22} + \dots + u - 1)$ $\cdot (u^{63} - u^{62} + \dots + 40u - 19)(u^{86} - u^{85} + \dots + 3792u + 428)$
c_4, c_{12}	$(u^8 - 2u^7 + 7u^6 - 8u^5 + 15u^4 - 10u^3 + 10u^2 - 4u + 4)$ $\cdot (u^{23} - u^{22} + \dots + u + 1)(u^{63} + 3u^{62} + \dots + 6u - 1)$ $\cdot (u^{86} + 7u^{85} + \dots - 22u^2 + 4)$
c_6	$((u^2 - u + 1)^4)(u^{23} + 3u^{22} + \dots - 2u - 2)(u^{43} + 3u^{42} + \dots - 5u^2 - 1)^2$ $\cdot (u^{63} - 10u^{62} + \dots + 26u - 10)$
c_7, c_{10}	$((u^2 + 1)^4)(u^{23} + 3u^{22} + \dots + 3u + 1)(u^{63} + 3u^{62} + \dots + 6u - 1)$ $\cdot (u^{86} + 13u^{85} + \dots + 254u + 41)$
c_8	$((u^2 + 1)^4)(u^{23} + 12u^{22} + \dots + 14u + 2)(u^{43} - 13u^{42} + \dots + 64u - 7)^2$ $\cdot (u^{63} + 15u^{62} + \dots - 1262u - 50)$
c_{11}	$((u^2 + 1)^4)(u^{23} - 12u^{22} + \dots + 14u - 2)(u^{43} - 13u^{42} + \dots + 64u - 7)^2$ $\cdot (u^{63} + 15u^{62} + \dots - 1262u - 50)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_5	$((y^2 + y + 1)^4)(y^{23} + 23y^{22} + \dots + 344y - 16)$ $\cdot ((y^{43} + 37y^{42} + \dots - 6y - 1)^2)(y^{63} + 58y^{62} + \dots + 948336y - 10000)$
c_2, c_6	$((y^2 + y + 1)^4)(y^{23} + 7y^{22} + \dots - 40y - 4)$ $\cdot ((y^{43} + 13y^{42} + \dots - 10y - 1)^2)(y^{63} + 18y^{62} + \dots - 444y - 100)$
c_3, c_9	$(y^8 - 10y^7 + 47y^6 - 126y^5 + 197y^4 - 192y^3 + 140y^2 - 64y + 16)$ $\cdot (y^{23} + 5y^{22} + \dots + 5y - 1)(y^{63} - 17y^{62} + \dots + 8174y - 361)$ $\cdot (y^{86} - 11y^{85} + \dots - 363120y + 183184)$
c_4, c_{12}	$(y^8 + 10y^7 + 47y^6 + 126y^5 + 197y^4 + 192y^3 + 140y^2 + 64y + 16)$ $\cdot (y^{23} + y^{22} + \dots - 11y - 1)(y^{63} + 51y^{62} + \dots - 106y - 1)$ $\cdot (y^{86} - 3y^{85} + \dots - 176y + 16)$
c_7, c_{10}	$((y + 1)^8)(y^{23} - 23y^{22} + \dots - y - 1)(y^{63} + 11y^{62} + \dots - 4y - 1)$ $\cdot (y^{86} - 37y^{85} + \dots - 1868y + 1681)$
c_8, c_{11}	$((y + 1)^8)(y^{23} + 8y^{22} + \dots - 40y - 4)$ $\cdot (y^{43} + 27y^{42} + \dots - 888y - 49)^2$ $\cdot (y^{63} + 31y^{62} + \dots + 249244y - 2500)$