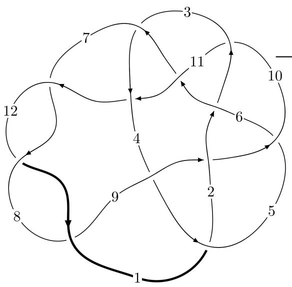
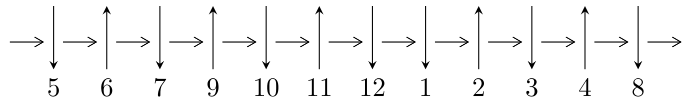
$12a_{1212}$ ($K12a_{1212}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -8237647u^{24} - 46666064u^{23} + \cdots + 1517168b - 99699472,$$
$$50602827u^{24} + 326501622u^{23} + \cdots + 3034336a + 1024079008,\ u^{25} + 8u^{24} + \cdots - 32u + 32\rangle$$
$$I_2^u = \langle 91u^{12} - 255u^{11} + \cdots + 82b + 126,\ 68u^{12} - 191u^{11} + \cdots + 164a + 1075,$$
$$u^{13} - 4u^{12} - u^{11} + 24u^{10} - 21u^9 - 44u^8 + 60u^7 + 23u^6 - 37u^5 - 10u^4 - 15u^3 + 24u^2 + 3u - 1\rangle$$
$$I_3^u = \langle -u^{51}a - 375u^{51} + \cdots + a + 909,\ 316u^{51}a - 805u^{51} + \cdots + 2748a - 4408,\ u^{52} - 6u^{51} + \cdots + 18u + 1\rangle$$
$$I_4^u = \langle b + 1,\ a,\ u - 1\rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 143 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.

$\boldsymbol{I_1^u = \langle -8.24 \times 10^6 u^{24} - 4.67 \times 10^7 u^{23} + \cdots + 1.52 \times 10^6 b - 9.97 \times 10^7,\ 5.06 \times 10^7 u^{24} + 3.27 \times 10^8 u^{23} + \cdots + 3.03 \times 10^6 a + 1.02 \times 10^9,\ u^{25} + 8u^{24} + \cdots - 32u + 32 \rangle}$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -16.6767u^{24} - 107.602u^{23} + \cdots + 549.463u - 337.497 \\ 5.42962u^{24} + 30.7587u^{23} + \cdots - 86.2463u + 65.7142 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -11.2471u^{24} - 76.8437u^{23} + \cdots + 463.217u - 271.783 \\ 5.42962u^{24} + 30.7587u^{23} + \cdots - 86.2463u + 65.7142 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 14.2117u^{24} + 90.2914u^{23} + \cdots - 434.374u + 271.092 \\ 3.50175u^{24} + 25.1620u^{23} + \cdots - 177.375u + 100.690 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 11.8969u^{24} + 71.8441u^{23} + \cdots - 240.897u + 176.461 \\ 23.6941u^{24} + 153.970u^{23} + \cdots - 804.871u + 491.973 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -6.67636u^{24} - 39.5426u^{23} + \cdots + 111.025u - 87.1118 \\ -17.0962u^{24} - 108.869u^{23} + \cdots + 532.397u - 332.532 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -3.98808u^{24} - 18.4219u^{23} + \cdots - 69.4800u + 9.06809 \\ -19.3622u^{24} - 117.721u^{23} + \cdots + 440.516u - 303.830 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 15.1868u^{24} + 104.234u^{23} + \cdots - 656.947u + 380.440 \\ 1.94010u^{24} + 24.7858u^{23} + \cdots - 406.617u + 192.420 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{5240957}{94823}u^{24} - \frac{67769311}{189646}u^{23} + \cdots + \frac{187802884}{94823}u - \frac{111850042}{94823}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3	$u^{25} - u^{24} + \cdots - 5u + 1$
c_2	$u^{25} - 16u^{24} + \cdots + 7168u - 1024$
c_4, c_{11}	$u^{25} + 7u^{24} + \cdots + 10u + 2$
c_5, c_{10}	$u^{25} + 4u^{24} + \cdots - 3u + 1$
c_6, c_9	$u^{25} + 2u^{24} + \cdots + 7u - 1$
c_7, c_8, c_{12}	$u^{25} - 8u^{24} + \cdots - 32u - 32$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3	$y^{25} - 7y^{24} + \cdots + 25y - 1$
c_2	$y^{25} + 18y^{23} + \cdots - 11010048y - 1048576$
c_4, c_{11}	$y^{25} - 21y^{24} + \cdots - 100y - 4$
c_5, c_{10}	$y^{25} - 32y^{24} + \cdots - 3y - 1$
c_6, c_9	$y^{25} - 2y^{24} + \cdots + 15y - 1$
c_7, c_8, c_{12}	$y^{25} - 24y^{24} + \cdots - 6656y - 1024$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.724396 + 0.814795I$ $a = -0.033461 + 1.260570I$ $b = -1.18344 - 0.87037I$	$-0.1080 - 15.3508I$	$-2.78225 + 10.65242I$
$u = 0.724396 - 0.814795I$ $a = -0.033461 - 1.260570I$ $b = -1.18344 + 0.87037I$	$-0.1080 + 15.3508I$	$-2.78225 - 10.65242I$
$u = 0.317167 + 1.050900I$ $a = 0.616196 - 0.409967I$ $b = -0.827326 + 0.814013I$	$1.10917 + 9.40524I$	$0.04392 - 9.75471I$
$u = 0.317167 - 1.050900I$ $a = 0.616196 + 0.409967I$ $b = -0.827326 - 0.814013I$	$1.10917 - 9.40524I$	$0.04392 + 9.75471I$
$u = 0.664502 + 0.907721I$ $a = -0.137319 - 0.952600I$ $b = 1.034870 + 0.744773I$	$-2.89814 - 6.85193I$	$-7.15013 + 8.59668I$
$u = 0.664502 - 0.907721I$ $a = -0.137319 + 0.952600I$ $b = 1.034870 - 0.744773I$	$-2.89814 + 6.85193I$	$-7.15013 - 8.59668I$
$u = 1.20846$ $a = 1.27084$ $b = 1.16050$	0.266082	-11.4730
$u = -1.266140 + 0.080450I$ $a = -0.243476 - 0.336575I$ $b = 0.274129 + 1.260920I$	$-0.76316 + 4.31765I$	$-0.89966 - 6.91445I$
$u = -1.266140 - 0.080450I$ $a = -0.243476 + 0.336575I$ $b = 0.274129 - 1.260920I$	$-0.76316 - 4.31765I$	$-0.89966 + 6.91445I$
$u = 0.692428$ $a = 4.42334$ $b = 0.311066$	0.704588	-85.9750

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.379800+0.232274I$ $a=-0.202915-0.655047I$ $b=-0.97116+1.06639I$	$-5.14325+3.90529I$	$0.85581-4.51378I$
$u=-1.379800-0.232274I$ $a=-0.202915+0.655047I$ $b=-0.97116-1.06639I$	$-5.14325-3.90529I$	$0.85581+4.51378I$
$u=\ \ 0.068901+0.526930I$ $a=-0.19999+1.73646I$ $b=\ \ 0.622226-0.843745I$	$3.21655-2.10472I$	$4.13419+3.80054I$
$u=\ \ 0.068901-0.526930I$ $a=-0.19999-1.73646I$ $b=\ \ 0.622226+0.843745I$	$3.21655+2.10472I$	$4.13419-3.80054I$
$u=\ \ 0.213598+0.439117I$ $a=\ \ 0.933169+0.905622I$ $b=-0.321753-0.450048I$	$-0.214830-1.179340I$	$-2.40251+6.38928I$
$u=\ \ 0.213598-0.439117I$ $a=\ \ 0.933169-0.905622I$ $b=-0.321753+0.450048I$	$-0.214830+1.179340I$	$-2.40251-6.38928I$
$u=-1.59465+0.30004I$ $a=\ \ 0.522691+0.816481I$ $b=\ \ 1.39230-0.76184I$	$-10.2598+11.2873I$	$-9.23051-7.41391I$
$u=-1.59465-0.30004I$ $a=\ \ 0.522691-0.816481I$ $b=\ \ 1.39230+0.76184I$	$-10.2598-11.2873I$	$-9.23051+7.41391I$
$u=-1.61150+0.27184I$ $a=-0.659558-0.892240I$ $b=-1.42726+0.83763I$	$-7.7900+19.4343I$	$-5.59666-9.62705I$
$u=-1.61150-0.27184I$ $a=-0.659558+0.892240I$ $b=-1.42726-0.83763I$	$-7.7900-19.4343I$	$-5.59666+9.62705I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.62950 + 0.21998I$ $a = 0.325830 + 0.720153I$ $b = 0.934852 - 0.257112I$	$-11.48300 + 4.00606I$	$-11.23597 - 3.11051I$
$u = -1.62950 - 0.21998I$ $a = 0.325830 - 0.720153I$ $b = 0.934852 + 0.257112I$	$-11.48300 - 4.00606I$	$-11.23597 + 3.11051I$
$u = -1.65218$ $a = -1.92363$ $b = -0.377729$	-7.34312	37.2350
$u = 1.36867 + 1.13663I$ $a = -0.056444 - 0.143003I$ $b = 0.425644 - 0.155525I$	$-2.78022 - 0.18590I$	$-44.6298 + 88.4844I$
$u = 1.36867 - 1.13663I$ $a = -0.056444 + 0.143003I$ $b = 0.425644 + 0.155525I$	$-2.78022 + 0.18590I$	$-44.6298 - 88.4844I$

II. $I_2^u = \langle 91u^{12} - 255u^{11} + \cdots + 82b + 126,\ 68u^{12} - 191u^{11} + \cdots + 164a + 1075,\ u^{13} - 4u^{12} + \cdots + 3u - 1\rangle$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.414634u^{12} + 1.16463u^{11} + \cdots - 4.85366u - 6.55488 \\ -1.10976u^{12} + 3.10976u^{11} + \cdots - 3.40244u - 1.53659 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -1.52439u^{12} + 4.27439u^{11} + \cdots - 8.25610u - 8.09146 \\ -1.10976u^{12} + 3.10976u^{11} + \cdots - 3.40244u - 1.53659 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -1.41463u^{12} + 5.66463u^{11} + \cdots - 32.3537u - 3.55488 \\ 0.390244u^{12} - 0.890244u^{11} + \cdots - 1.90244u - 1.03659 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 2.63415u^{12} - 9.38415u^{11} + \cdots + 42.6585u + 7.62805 \\ -0.0731707u^{12} + 0.0731707u^{11} + \cdots + 2.73171u + 1.97561 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -1.65854u^{12} + 6.15854u^{11} + \cdots - 35.4146u - 7.71951 \\ -1.10976u^{12} + 3.10976u^{11} + \cdots - 1.40244u - 2.53659 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -2.36585u^{12} + 9.36585u^{11} + \cdots - 51.3415u - 11.1220 \\ -0.390244u^{12} + 1.39024u^{11} + \cdots - 6.09756u - 2.46341 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} 0.286585u^{12} - 0.286585u^{11} + \cdots - 11.1159u - 6.48780 \\ 0.00609756u^{12} + 0.243902u^{11} + \cdots - 5.81098u - 0.664634 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -\frac{455}{164}u^{12} + \frac{1111}{164}u^{11} + \frac{2107}{164}u^{10} - \frac{3673}{82}u^9 - \frac{727}{82}u^8 + \frac{3812}{41}u^7 - \frac{1397}{82}u^6 - \frac{8187}{164}u^5 - \frac{517}{41}u^4 - \frac{2515}{164}u^3 + \frac{1706}{41}u^2 - \frac{2625}{164}u + \frac{68}{41}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3	$u^{13} - 2u^{12} + \cdots + 12u - 4$
c_2	$u^{13} - u^{12} + \cdots - 10u - 2$
c_4, c_{11}	$4(4u^{13} + 4u^{12} + \cdots - 8u + 2)$
c_5, c_{10}	$4(4u^{13} + 4u^{12} + \cdots + 2u + 1)$
c_6, c_9	$u^{13} - 3u^{12} + \cdots + 8u + 4$
c_7, c_8	$u^{13} - 4u^{12} + \cdots + 3u - 1$
c_{12}	$u^{13} + 4u^{12} + \cdots + 3u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3	$y^{13} - 10y^{12} + \cdots + 224y - 16$
c_2	$y^{13} - 3y^{12} + \cdots + 104y - 4$
c_4, c_{11}	$16(16y^{13} - 64y^{12} + \cdots - 108y - 4)$
c_5, c_{10}	$16(16y^{13} - 96y^{12} + \cdots + 26y - 1)$
c_6, c_9	$y^{13} - 9y^{12} + \cdots + 112y - 16$
c_7, c_8, c_{12}	$y^{13} - 18y^{12} + \cdots + 57y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.270141 + 0.676643I$ $a = -0.93637 + 1.11204I$ $b = 0.765732 - 0.821657I$	$-0.48063 + 8.61216I$	$-2.60620 - 9.97787I$
$u = -0.270141 - 0.676643I$ $a = -0.93637 - 1.11204I$ $b = 0.765732 + 0.821657I$	$-0.48063 - 8.61216I$	$-2.60620 + 9.97787I$
$u = -1.31514$ $a = 1.20272$ $b = 1.39700$	0.914772	1.94400
$u = 1.329960 + 0.247887I$ $a = -0.175350 + 0.637473I$ $b = -1.13244 - 1.15488I$	$-5.47949 - 3.91166I$	$-23.6039 + 5.6804I$
$u = 1.329960 - 0.247887I$ $a = -0.175350 - 0.637473I$ $b = -1.13244 + 1.15488I$	$-5.47949 + 3.91166I$	$-23.6039 - 5.6804I$
$u = -1.46530$ $a = -1.16965$ $b = -1.81614$	-5.60219	-7.40030
$u = 1.51888 + 0.18868I$ $a = 0.428372 - 1.028980I$ $b = 1.042110 + 0.953933I$	$-6.64087 - 11.50500I$	$-6.55247 + 9.76254I$
$u = 1.51888 - 0.18868I$ $a = 0.428372 + 1.028980I$ $b = 1.042110 - 0.953933I$	$-6.64087 + 11.50500I$	$-6.55247 - 9.76254I$
$u = -1.63371$ $a = -0.619363$ $b = -1.26888$	-11.9561	-13.2470
$u = -0.251433$ $a = -4.95375$ $b = 0.682120$	4.61878	8.54690

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.157502$ $a = -7.10717$ $b = -1.50496$	0.0467492	0.0971950
$u = 1.67535 + 0.84705I$ $a = 0.0069550 + 0.1189710I$ $b = -0.419957 + 0.085891I$	$-2.79417 - 0.14161I$	$-99.2080 - 53.0661I$
$u = 1.67535 - 0.84705I$ $a = 0.0069550 - 0.1189710I$ $b = -0.419957 - 0.085891I$	$-2.79417 + 0.14161I$	$-99.2080 + 53.0661I$

III. $\boldsymbol{I_3^u = \langle -u^{51}a - 375u^{51} + \cdots + a + 909,\ 316u^{51}a - 805u^{51} + \cdots + 2748a - 4408,\ u^{52} - 6u^{51} + \cdots + 18u + 1\rangle}$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} a \\ 0.0312500au^{51} + 11.7188u^{51} + \cdots - 0.0312500a - 28.4063 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.0312500au^{51} + 11.7188u^{51} + \cdots + 0.968750a - 28.4063 \\ 0.0312500au^{51} + 11.7188u^{51} + \cdots - 0.0312500a - 28.4063 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 20.0625au^{51} - 41.6250u^{51} + \cdots - 19.7500a + 50.3125 \\ 95.1563au^{51} + 30.0313u^{51} + \cdots - 60.0938a - 21.5313 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -39.6563au^{51} + 40.9063u^{51} + \cdots - 76.2188a + 136.719 \\ -156.906au^{51} + 24.2188u^{51} + \cdots + 98.9063a - 16.2813 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -167.281au^{51} - 65.6563u^{51} + \cdots + 123.719a + 12.5313 \\ -146.594au^{51} - 64.6563u^{51} + \cdots + 92.9688a + 27.5313 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 494.219au^{51} + 95.1563u^{51} + \cdots - 336.594a - 117.531 \\ 395.313au^{51} + 111.438u^{51} + \cdots - 261.500a - 167.375 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -\frac{1335}{16}u^{51} + \frac{2831}{8}u^{50} + \cdots + a + \frac{507}{16} \\ 0.0312500au^{51} - 143.844u^{51} + \cdots - 0.0312500a + 66.9063 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 36u^{51} + \frac{195}{4}u^{50} + \cdots - 8010u - 2630$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_3	$u^{104} + 5u^{103} + \cdots - 552520u + 36268$
c_2	$(u^{52} + 12u^{51} + \cdots - 64u^2 + 1)^2$
c_4, c_{11}	$4(4u^{104} + 52u^{103} + \cdots - 20472u + 2183)$
c_5, c_{10}	$4(4u^{104} + 52u^{103} + \cdots - 114u + 1)$
c_6, c_9	$u^{104} + 15u^{103} + \cdots - 1504u - 2908$
c_7, c_8, c_{12}	$(u^{52} + 6u^{51} + \cdots - 18u + 1)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3	$y^{104} - 113y^{103} + \cdots - 119319983280y + 1315367824$
c_2	$(y^{52} - 12y^{51} + \cdots - 128y + 1)^2$
c_4, c_{11}	$16(16y^{104} - 928y^{103} + \cdots - 2.19441 \times 10^8 y + 4765489)$
c_5, c_{10}	$16(16y^{104} - 1440y^{103} + \cdots - 4076y + 1)$
c_6, c_9	$y^{104} - 97y^{103} + \cdots - 959773360y + 8456464$
c_7, c_8, c_{12}	$(y^{52} - 58y^{51} + \cdots - 278y + 1)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.666943 + 0.765381I$ $a = -0.411358 + 0.852975I$ $b = 0.753598 + 0.019420I$	$-2.60454 + 7.14131I$	0
$u = -0.666943 + 0.765381I$ $a = 0.047648 - 1.142430I$ $b = -1.12596 + 0.94335I$	$-2.60454 + 7.14131I$	0
$u = -0.666943 - 0.765381I$ $a = -0.411358 - 0.852975I$ $b = 0.753598 - 0.019420I$	$-2.60454 - 7.14131I$	0
$u = -0.666943 - 0.765381I$ $a = 0.047648 + 1.142430I$ $b = -1.12596 - 0.94335I$	$-2.60454 - 7.14131I$	0
$u = -0.930311$ $a = -1.35080$ $b = 0.295990$	3.18882	2.51350
$u = -0.930311$ $a = 1.46851$ $b = 1.37728$	3.18882	2.51350
$u = -0.451134 + 0.971186I$ $a = 0.653621 - 0.050648I$ $b = -0.608265 - 0.548442I$	$-1.79010 - 1.53599I$	0
$u = -0.451134 + 0.971186I$ $a = -0.217119 + 0.512197I$ $b = 0.806048 - 0.774083I$	$-1.79010 - 1.53599I$	0
$u = -0.451134 - 0.971186I$ $a = 0.653621 + 0.050648I$ $b = -0.608265 + 0.548442I$	$-1.79010 + 1.53599I$	0
$u = -0.451134 - 0.971186I$ $a = -0.217119 - 0.512197I$ $b = 0.806048 + 0.774083I$	$-1.79010 + 1.53599I$	0

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.616816+0.640019I$ $a=-0.18999-1.45500I$ $b=-0.636561+0.935758I$	$2.51626+7.46030I$	$0.-8.58345I$
$u=-0.616816+0.640019I$ $a=\ \ 0.05358+1.63243I$ $b=\ \ 1.027170-0.731584I$	$2.51626+7.46030I$	$0.-8.58345I$
$u=-0.616816-0.640019I$ $a=-0.18999+1.45500I$ $b=-0.636561-0.935758I$	$2.51626-7.46030I$	$0.+8.58345I$
$u=-0.616816-0.640019I$ $a=\ \ 0.05358-1.63243I$ $b=\ \ 1.027170+0.731584I$	$2.51626-7.46030I$	$0.+8.58345I$
$u=\ \ 0.872813+0.698635I$ $a=-0.645062+0.662035I$ $b=-1.10805-0.95668I$	$0.44754+2.99101I$	0
$u=\ \ 0.872813+0.698635I$ $a=-0.605533-0.090182I$ $b=\ \ 0.832738-0.497105I$	$0.44754+2.99101I$	0
$u=\ \ 0.872813-0.698635I$ $a=-0.645062-0.662035I$ $b=-1.10805+0.95668I$	$0.44754-2.99101I$	0
$u=\ \ 0.872813-0.698635I$ $a=-0.605533+0.090182I$ $b=\ \ 0.832738+0.497105I$	$0.44754-2.99101I$	0
$u=\ \ 0.329397+0.733690I$ $a=\ \ 0.355573-0.859717I$ $b=-0.476590+1.311850I$	$1.93142-7.86817I$	$1.54415+8.03498I$
$u=\ \ 0.329397+0.733690I$ $a=-0.55839-1.54194I$ $b=\ \ 1.046220+0.703764I$	$1.93142-7.86817I$	$1.54415+8.03498I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.329397 - 0.733690I$ $a = 0.355573 + 0.859717I$ $b = -0.476590 - 1.311850I$	$1.93142 + 7.86817I$	$1.54415 - 8.03498I$
$u = 0.329397 - 0.733690I$ $a = -0.55839 + 1.54194I$ $b = 1.046220 - 0.703764I$	$1.93142 + 7.86817I$	$1.54415 - 8.03498I$
$u = -0.383886 + 0.683449I$ $a = -1.005650 - 0.435411I$ $b = 0.832036 + 0.618946I$	$3.20645 - 3.00363I$	$2.68384 + 4.04752I$
$u = -0.383886 + 0.683449I$ $a = 0.947761 + 0.795250I$ $b = -0.318481 - 0.754888I$	$3.20645 - 3.00363I$	$2.68384 + 4.04752I$
$u = -0.383886 - 0.683449I$ $a = -1.005650 + 0.435411I$ $b = 0.832036 - 0.618946I$	$3.20645 + 3.00363I$	$2.68384 - 4.04752I$
$u = -0.383886 - 0.683449I$ $a = 0.947761 - 0.795250I$ $b = -0.318481 + 0.754888I$	$3.20645 + 3.00363I$	$2.68384 - 4.04752I$
$u = 0.713698 + 0.208798I$ $a = 0.510056 + 1.009760I$ $b = -0.941920 - 0.046805I$	$-2.92201 - 1.86532I$	$-8.84509 + 5.50281I$
$u = 0.713698 + 0.208798I$ $a = 1.052470 + 0.698068I$ $b = 0.616268 + 0.472651I$	$-2.92201 - 1.86532I$	$-8.84509 + 5.50281I$
$u = 0.713698 - 0.208798I$ $a = 0.510056 - 1.009760I$ $b = -0.941920 + 0.046805I$	$-2.92201 + 1.86532I$	$-8.84509 - 5.50281I$
$u = 0.713698 - 0.208798I$ $a = 1.052470 - 0.698068I$ $b = 0.616268 - 0.472651I$	$-2.92201 + 1.86532I$	$-8.84509 - 5.50281I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.419761 + 0.482531I$ $a = -0.735342 - 0.873272I$ $b = 0.679260 + 0.823186I$	$3.56510 + 1.61688I$	$3.53854 - 5.28642I$
$u = -0.419761 + 0.482531I$ $a = 0.54033 + 1.94819I$ $b = 0.674298 - 0.619590I$	$3.56510 + 1.61688I$	$3.53854 - 5.28642I$
$u = -0.419761 - 0.482531I$ $a = -0.735342 + 0.873272I$ $b = 0.679260 - 0.823186I$	$3.56510 - 1.61688I$	$3.53854 + 5.28642I$
$u = -0.419761 - 0.482531I$ $a = 0.54033 - 1.94819I$ $b = 0.674298 + 0.619590I$	$3.56510 - 1.61688I$	$3.53854 + 5.28642I$
$u = 0.045922 + 0.614097I$ $a = 0.388372 + 0.865568I$ $b = -0.178151 - 1.294950I$	$-0.596311 - 0.798278I$	$-1.05944 + 5.87715I$
$u = 0.045922 + 0.614097I$ $a = 1.70122 + 0.38926I$ $b = -0.756307 - 0.292721I$	$-0.596311 - 0.798278I$	$-1.05944 + 5.87715I$
$u = 0.045922 - 0.614097I$ $a = 0.388372 - 0.865568I$ $b = -0.178151 + 1.294950I$	$-0.596311 + 0.798278I$	$-1.05944 - 5.87715I$
$u = 0.045922 - 0.614097I$ $a = 1.70122 - 0.38926I$ $b = -0.756307 + 0.292721I$	$-0.596311 + 0.798278I$	$-1.05944 - 5.87715I$
$u = -1.384960 + 0.212125I$ $a = -0.301792 - 0.760811I$ $b = -1.08419 + 0.98460I$	$-5.13846 + 3.88504I$	0
$u = -1.384960 + 0.212125I$ $a = -0.086570 - 0.550152I$ $b = -0.690758 + 1.137670I$	$-5.13846 + 3.88504I$	0

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.384960 - 0.212125I$ $a = -0.301792 + 0.760811I$ $b = -1.08419 - 0.98460I$	$-5.13846 - 3.88504I$	0
$u = -1.384960 - 0.212125I$ $a = -0.086570 + 0.550152I$ $b = -0.690758 - 1.137670I$	$-5.13846 - 3.88504I$	0
$u = 1.42229 + 0.08245I$ $a = -0.0081558 - 0.1341870I$ $b = -0.11523 + 2.58075I$	$-4.85666 - 0.84505I$	0
$u = 1.42229 + 0.08245I$ $a = -0.44566 + 1.85120I$ $b = -0.911624 - 0.228098I$	$-4.85666 - 0.84505I$	0
$u = 1.42229 - 0.08245I$ $a = -0.0081558 + 0.1341870I$ $b = -0.11523 - 2.58075I$	$-4.85666 + 0.84505I$	0
$u = 1.42229 - 0.08245I$ $a = -0.44566 - 1.85120I$ $b = -0.911624 + 0.228098I$	$-4.85666 + 0.84505I$	0
$u = 1.43082 + 0.19034I$ $a = 0.203101 - 0.215510I$ $b = 0.580757 + 0.091897I$	$-2.57458 - 0.10242I$	0
$u = 1.43082 + 0.19034I$ $a = 0.255686 + 0.054319I$ $b = 0.153310 - 0.085568I$	$-2.57458 - 0.10242I$	0
$u = 1.43082 - 0.19034I$ $a = 0.203101 + 0.215510I$ $b = 0.580757 - 0.091897I$	$-2.57458 + 0.10242I$	0
$u = 1.43082 - 0.19034I$ $a = 0.255686 - 0.054319I$ $b = 0.153310 + 0.085568I$	$-2.57458 + 0.10242I$	0

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.45251$ $a = 0.438958$ $b = 4.04061$	-5.33005	0
$u = -1.45251$ $a = -3.01723$ $b = -1.20431$	-5.33005	0
$u = -1.44587 + 0.20732I$ $a = 0.719613 + 1.113810I$ $b = 1.27041 - 0.72613I$	$-3.76396 + 11.13930I$	0
$u = -1.44587 + 0.20732I$ $a = 0.181699 + 0.251896I$ $b = 0.00148 - 1.67493I$	$-3.76396 + 11.13930I$	0
$u = -1.44587 - 0.20732I$ $a = 0.719613 - 1.113810I$ $b = 1.27041 + 0.72613I$	$-3.76396 - 11.13930I$	0
$u = -1.44587 - 0.20732I$ $a = 0.181699 - 0.251896I$ $b = 0.00148 + 1.67493I$	$-3.76396 - 11.13930I$	0
$u = -1.48820 + 0.02121I$ $a = 0.367795 - 0.819327I$ $b = 0.66690 + 1.37814I$	$-6.00418 + 1.14263I$	0
$u = -1.48820 + 0.02121I$ $a = -0.55078 - 1.40100I$ $b = -0.852406 + 0.492909I$	$-6.00418 + 1.14263I$	0
$u = -1.48820 - 0.02121I$ $a = 0.367795 + 0.819327I$ $b = 0.66690 - 1.37814I$	$-6.00418 - 1.14263I$	0
$u = -1.48820 - 0.02121I$ $a = -0.55078 + 1.40100I$ $b = -0.852406 - 0.492909I$	$-6.00418 - 1.14263I$	0

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.48325 + 0.13019I$ $a = 0.880572 - 0.865612I$ $b = 0.891996 + 0.603870I$	$-2.66236 - 3.76069I$	0
$u = 1.48325 + 0.13019I$ $a = -0.099166 + 0.326301I$ $b = 0.543218 - 1.173170I$	$-2.66236 - 3.76069I$	0
$u = 1.48325 - 0.13019I$ $a = 0.880572 + 0.865612I$ $b = 0.891996 - 0.603870I$	$-2.66236 + 3.76069I$	0
$u = 1.48325 - 0.13019I$ $a = -0.099166 - 0.326301I$ $b = 0.543218 + 1.173170I$	$-2.66236 + 3.76069I$	0
$u = -0.486302 + 0.122804I$ $a = 0.58416 + 2.33590I$ $b = 1.107410 - 0.847322I$	$-2.15302 + 8.44584I$	$-8.09837 - 8.04505I$
$u = -0.486302 + 0.122804I$ $a = 1.23147 - 2.51030I$ $b = 0.724727 - 0.354156I$	$-2.15302 + 8.44584I$	$-8.09837 - 8.04505I$
$u = -0.486302 - 0.122804I$ $a = 0.58416 - 2.33590I$ $b = 1.107410 + 0.847322I$	$-2.15302 - 8.44584I$	$-8.09837 + 8.04505I$
$u = -0.486302 - 0.122804I$ $a = 1.23147 + 2.51030I$ $b = 0.724727 + 0.354156I$	$-2.15302 - 8.44584I$	$-8.09837 + 8.04505I$
$u = 1.51223 + 0.05669I$ $a = -0.724214 + 0.595511I$ $b = -1.61518 - 0.65585I$	$-9.94685 - 2.82043I$	0
$u = 1.51223 + 0.05669I$ $a = -0.854976 - 0.740454I$ $b = -1.016630 + 0.155554I$	$-9.94685 - 2.82043I$	0

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.51223 - 0.05669I$ $a = -0.724214 - 0.595511I$ $b = -1.61518 + 0.65585I$	$-9.94685 + 2.82043I$	0
$u = 1.51223 - 0.05669I$ $a = -0.854976 + 0.740454I$ $b = -1.016630 - 0.155554I$	$-9.94685 + 2.82043I$	0
$u = 1.52714 + 0.05481I$ $a = 0.652836 - 0.809744I$ $b = 1.45810 + 0.96153I$	$-8.98085 - 9.19273I$	0
$u = 1.52714 + 0.05481I$ $a = 0.654078 + 1.174640I$ $b = 0.737950 - 0.124608I$	$-8.98085 - 9.19273I$	0
$u = 1.52714 - 0.05481I$ $a = 0.652836 + 0.809744I$ $b = 1.45810 - 0.96153I$	$-8.98085 + 9.19273I$	0
$u = 1.52714 - 0.05481I$ $a = 0.654078 - 1.174640I$ $b = 0.737950 + 0.124608I$	$-8.98085 + 9.19273I$	0
$u = -0.446869 + 0.150367I$ $a = -0.59796 - 1.67547I$ $b = -1.267440 + 0.621768I$	$-3.34579 + 1.99954I$	$-9.53386 - 5.76530I$
$u = -0.446869 + 0.150367I$ $a = -1.63764 + 1.19484I$ $b = -0.940989 + 0.288189I$	$-3.34579 + 1.99954I$	$-9.53386 - 5.76530I$
$u = -0.446869 - 0.150367I$ $a = -0.59796 + 1.67547I$ $b = -1.267440 - 0.621768I$	$-3.34579 - 1.99954I$	$-9.53386 + 5.76530I$
$u = -0.446869 - 0.150367I$ $a = -1.63764 - 1.19484I$ $b = -0.940989 - 0.288189I$	$-3.34579 - 1.99954I$	$-9.53386 + 5.76530I$

Solutions to I_3^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.56443 + 0.02584I$ $a = 0.670758 - 0.787254I$ $b = 0.737244 + 0.082736I$	$-10.56320 + 2.54580I$	0
$u = -1.56443 + 0.02584I$ $a = -0.326491 - 0.690903I$ $b = -1.086970 + 0.336405I$	$-10.56320 + 2.54580I$	0
$u = -1.56443 - 0.02584I$ $a = 0.670758 + 0.787254I$ $b = 0.737244 - 0.082736I$	$-10.56320 - 2.54580I$	0
$u = -1.56443 - 0.02584I$ $a = -0.326491 + 0.690903I$ $b = -1.086970 - 0.336405I$	$-10.56320 - 2.54580I$	0
$u = 1.57281 + 0.20541I$ $a = -0.594745 + 0.855793I$ $b = -0.908037 - 1.003660I$	$-4.77180 - 10.59140I$	0
$u = 1.57281 + 0.20541I$ $a = 0.697890 - 1.021960I$ $b = 1.19777 + 0.76508I$	$-4.77180 - 10.59140I$	0
$u = 1.57281 - 0.20541I$ $a = -0.594745 - 0.855793I$ $b = -0.908037 + 1.003660I$	$-4.77180 + 10.59140I$	0
$u = 1.57281 - 0.20541I$ $a = 0.697890 + 1.021960I$ $b = 1.19777 - 0.76508I$	$-4.77180 + 10.59140I$	0
$u = 1.58464 + 0.25100I$ $a = 0.232902 - 0.974487I$ $b = 0.973307 + 0.270389I$	$-10.0157 - 10.9120I$	0
$u = 1.58464 + 0.25100I$ $a = -0.607967 + 0.778820I$ $b = -1.51183 - 0.91314I$	$-10.0157 - 10.9120I$	0

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.58464 - 0.25100I$ $a = 0.232902 + 0.974487I$ $b = 0.973307 - 0.270389I$	$-10.0157 + 10.9120I$	0
$u = 1.58464 - 0.25100I$ $a = -0.607967 - 0.778820I$ $b = -1.51183 + 0.91314I$	$-10.0157 + 10.9120I$	0
$u = 0.347781 + 0.161481I$ $a = 1.12566 + 2.31078I$ $b = -0.101270 - 0.960129I$	$0.159547 - 0.651334I$	$-2.56530 + 10.53331I$
$u = 0.347781 + 0.161481I$ $a = 1.55949 + 3.68489I$ $b = -0.513031 - 0.014829I$	$0.159547 - 0.651334I$	$-2.56530 + 10.53331I$
$u = 0.347781 - 0.161481I$ $a = 1.12566 - 2.31078I$ $b = -0.101270 + 0.960129I$	$0.159547 + 0.651334I$	$-2.56530 - 10.53331I$
$u = 0.347781 - 0.161481I$ $a = 1.55949 - 3.68489I$ $b = -0.513031 + 0.014829I$	$0.159547 + 0.651334I$	$-2.56530 - 10.53331I$
$u = 1.62109 + 0.33591I$ $a = 0.555168 - 0.573504I$ $b = 1.60200 + 0.70870I$	$-8.69767 - 3.49825I$	0
$u = 1.62109 + 0.33591I$ $a = -0.047708 + 0.657048I$ $b = -0.729629 - 0.022515I$	$-8.69767 - 3.49825I$	0
$u = 1.62109 - 0.33591I$ $a = 0.555168 + 0.573504I$ $b = 1.60200 - 0.70870I$	$-8.69767 + 3.49825I$	0
$u = 1.62109 - 0.33591I$ $a = -0.047708 - 0.657048I$ $b = -0.729629 + 0.022515I$	$-8.69767 + 3.49825I$	0

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.77146$ $a = -0.755855$ $b = -1.41414$	-9.81056	0
$u = -1.77146$ $a = 0.182973$ $b = 0.931880$	-9.81056	0
$u = -0.0631759$ $a = 1.69572$ $b = -8.85412$	0.00212035	-2056.70
$u = -0.0631759$ $a = -139.805$ $b = -1.01065$	0.00212035	-2056.70

IV. $I_4^u = \langle b+1,\ a,\ u-1 \rangle$

(i) Arc colorings

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

$$a_{12} = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

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

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

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

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

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

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

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

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

$$a_{10} = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$$

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -12$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.00000$ $a = 0$ $b = -1.00000$	-3.28987	-12.0000

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_3	$(u-1)(u^{13}-2u^{12}+\cdots+12u-4)(u^{25}-u^{24}+\cdots-5u+1)$ $\cdot(u^{104}+5u^{103}+\cdots-552520u+36268)$
c_2	$u(u^{13}-u^{12}+\cdots-10u-2)(u^{25}-16u^{24}+\cdots+7168u-1024)$ $\cdot(u^{52}+12u^{51}+\cdots-64u^2+1)^2$
c_4, c_{11}	$16(u)(4u^{13}+4u^{12}+\cdots-8u+2)(u^{25}+7u^{24}+\cdots+10u+2)$ $\cdot(4u^{104}+52u^{103}+\cdots-20472u+2183)$
c_5, c_{10}	$16(u-1)(4u^{13}+4u^{12}+\cdots+2u+1)(u^{25}+4u^{24}+\cdots-3u+1)$ $\cdot(4u^{104}+52u^{103}+\cdots-114u+1)$
c_6, c_9	$(u-1)(u^{13}-3u^{12}+\cdots+8u+4)(u^{25}+2u^{24}+\cdots+7u-1)$ $\cdot(u^{104}+15u^{103}+\cdots-1504u-2908)$
c_7, c_8	$(u-1)(u^{13}-4u^{12}+\cdots+3u-1)(u^{25}-8u^{24}+\cdots-32u-32)$ $\cdot(u^{52}+6u^{51}+\cdots-18u+1)^2$
c_{12}	$(u+1)(u^{13}+4u^{12}+\cdots+3u+1)(u^{25}-8u^{24}+\cdots-32u-32)$ $\cdot(u^{52}+6u^{51}+\cdots-18u+1)^2$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_3	$(y-1)(y^{13}-10y^{12}+\cdots+224y-16)(y^{25}-7y^{24}+\cdots+25y-1)$ $\cdot(y^{104}-113y^{103}+\cdots-119319983280y+1315367824)$
c_2	$y(y^{13}-3y^{12}+\cdots+104y-4)$ $\cdot(y^{25}+18y^{23}+\cdots-11010048y-1048576)$ $\cdot(y^{52}-12y^{51}+\cdots-128y+1)^2$
c_4, c_{11}	$256(y)(16y^{13}-64y^{12}+\cdots-108y-4)(y^{25}-21y^{24}+\cdots-100y-4)$ $\cdot(16y^{104}-928y^{103}+\cdots-219441238y+4765489)$
c_5, c_{10}	$256(y-1)(16y^{13}-96y^{12}+\cdots+26y-1)(y^{25}-32y^{24}+\cdots-3y-1)$ $\cdot(16y^{104}-1440y^{103}+\cdots-4076y+1)$
c_6, c_9	$(y-1)(y^{13}-9y^{12}+\cdots+112y-16)(y^{25}-2y^{24}+\cdots+15y-1)$ $\cdot(y^{104}-97y^{103}+\cdots-959773360y+8456464)$
c_7, c_8, c_{12}	$(y-1)(y^{13}-18y^{12}+\cdots+57y-1)(y^{25}-24y^{24}+\cdots-6656y-1024)$ $\cdot(y^{52}-58y^{51}+\cdots-278y+1)^2$