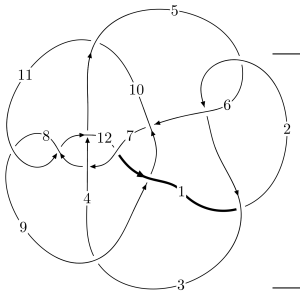
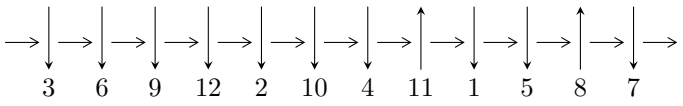
$12a_{0408}$ $(K12a_{0408})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle -5.94883 \times 10^{82} u^{65} + 1.44814 \times 10^{84} u^{64} + \cdots + 5.09401 \times 10^{83} b - 2.12573 \times 10^{85}, \\
&\quad - 4.92961 \times 10^{84} u^{65} + 1.25631 \times 10^{86} u^{64} + \cdots + 3.31110 \times 10^{85} a + 5.80286 \times 10^{87}, \\
&\quad u^{66} - 26 u^{65} + \cdots - 29690 u + 1300 \rangle \\
I_2^u &= \langle 817219108 u^{29} a^3 + 512017417 u^{29} a^2 + \cdots + 807804715 a + 597442347, \\
&\quad 16 u^{29} a^2 - 224 u^{29} a + \cdots - 1933 a + 10413,\ u^{30} + 9 u^{29} + \cdots + 14 u + 1 \rangle \\
I_3^u &= \langle 2.05685 \times 10^{15} u^{35} + 3.17765 \times 10^{16} u^{34} + \cdots + 1.33360 \times 10^{16} b + 3.92713 \times 10^{16}, \\
&\quad - 2.48733 \times 10^{16} u^{35} - 3.52235 \times 10^{17} u^{34} + \cdots + 9.33523 \times 10^{16} a - 1.32132 \times 10^{18}, \\
&\quad u^{36} + 15 u^{35} + \cdots + 100 u + 7 \rangle \\
I_4^u &= \langle -8 a^3 u - 6 a^3 - 3 a^2 u - 21 a^2 + 59 a u + 50 b - 37 a + 13 u + 41, \\
&\quad a^4 - a^3 u + a^3 - 3 a^2 u - 4 a^2 + 3 a u - a + 2 u + 3,\ u^2 + 1 \rangle
\end{aligned}$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 230 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. $\boldsymbol{I_1^u = \langle -5.95 \times 10^{82} u^{65} + 1.45 \times 10^{84} u^{64} + \cdots + 5.09 \times 10^{83} b - 2.13 \times 10^{85},\ -4.93 \times 10^{84} u^{65} + 1.26 \times 10^{86} u^{64} + \cdots + 3.31 \times 10^{85} a + 5.80 \times 10^{87},\ u^{66} - 26 u^{65} + \cdots - 29690 u + 1300 \rangle}$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_4 = \begin{pmatrix} 0.148881u^{65} - 3.79422u^{64} + \cdots + 3912.79u - 175.254 \\ 0.116781u^{65} - 2.84284u^{64} + \cdots - 736.065u + 41.7300 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} -0.0445864u^{65} + 1.18662u^{64} + \cdots + 403.833u - 23.4390 \\ -0.0766864u^{65} + 2.13800u^{64} + \cdots - 4245.02u + 193.545 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.121508u^{65} - 3.33673u^{64} + \cdots + 5260.00u - 233.217 \\ 0.407157u^{65} - 10.5042u^{64} + \cdots + 6775.86u - 288.744 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.0389164u^{65} + 1.01371u^{64} + \cdots - 1316.21u + 61.4204 \\ -0.0414582u^{65} + 1.03834u^{64} + \cdots - 132.582u + 3.30431 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.197987u^{65} - 4.99729u^{64} + \cdots + 2699.62u - 115.833 \\ 0.159022u^{65} - 3.78559u^{64} + \cdots - 2163.10u + 104.551 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -0.00561786u^{65} + 0.162911u^{64} + \cdots - 830.706u + 38.6946 \\ -0.00627711u^{65} + 0.204138u^{64} + \cdots - 741.092u + 32.1698 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -0.0826048u^{65} + 2.15913u^{64} + \cdots - 2200.04u + 99.6941 \\ -0.141191u^{65} + 3.59078u^{64} + \cdots - 2245.40u + 96.5869 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.0628923u^{65} + 1.60318u^{64} + \cdots - 1571.82u + 67.8794 \\ 0.00840374u^{65} - 0.102004u^{64} + \cdots - 1483.96u + 65.7618 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -0.953489u^{65} + 23.7173u^{64} + \cdots - 15544.8u + 676.189$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{66}+31u^{65}+\cdots+17676u+2704$
c_2, c_5	$u^{66}+13u^{65}+\cdots-738u-52$
c_3, c_{10}	$u^{66}+13u^{64}+\cdots+37u-181$
c_4, c_7	$u^{66}-15u^{64}+\cdots-u-1$
c_6, c_9	$u^{66}+2u^{65}+\cdots+5u+2$
c_8, c_{11}	$u^{66}+26u^{65}+\cdots+29690u+1300$
c_{12}	$u^{66}+56u^{65}+\cdots+17045651456u+536870912$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{66} + 17y^{65} + \cdots - 505176688y + 7311616$
c_2, c_5	$y^{66} - 31y^{65} + \cdots - 17676y + 2704$
c_3, c_{10}	$y^{66} + 26y^{65} + \cdots + 13111y + 32761$
c_4, c_7	$y^{66} - 30y^{65} + \cdots - 51y + 1$
c_6, c_9	$y^{66} - 2y^{65} + \cdots + 43y + 4$
c_8, c_{11}	$y^{66} + 46y^{65} + \cdots + 26109300y + 1690000$
c_{12}	$y^{66} + 6y^{65} + \cdots - 1242993497154256896y + 288230376151711744$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.965644 + 0.116585I$ $a = -0.128217 + 0.077481I$ $b = 0.781461 + 0.909186I$	$0.04153 - 7.33110I$	0
$u = 0.965644 - 0.116585I$ $a = -0.128217 - 0.077481I$ $b = 0.781461 - 0.909186I$	$0.04153 + 7.33110I$	0
$u = 0.968871$ $a = 0.0216859$ $b = -0.674970$	-4.57047	0
$u = -0.107773 + 0.943078I$ $a = -2.13279 - 0.30507I$ $b = -1.152450 + 0.804909I$	$-1.36529 - 0.47729I$	0
$u = -0.107773 - 0.943078I$ $a = -2.13279 + 0.30507I$ $b = -1.152450 - 0.804909I$	$-1.36529 + 0.47729I$	0
$u = -0.191979 + 0.928389I$ $a = -1.20721 - 0.75473I$ $b = -0.883784 + 0.130347I$	$-1.54285 - 0.80188I$	0
$u = -0.191979 - 0.928389I$ $a = -1.20721 + 0.75473I$ $b = -0.883784 - 0.130347I$	$-1.54285 + 0.80188I$	0
$u = -0.212483 + 1.044600I$ $a = 1.297590 + 0.542475I$ $b = 0.904573 - 0.243533I$	$-2.15381 - 4.98396I$	0
$u = -0.212483 - 1.044600I$ $a = 1.297590 - 0.542475I$ $b = 0.904573 + 0.243533I$	$-2.15381 + 4.98396I$	0
$u = 0.064628 + 1.072060I$ $a = 1.87038 + 0.10819I$ $b = 1.06339 - 0.93238I$	$-2.26306 + 0.50106I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.064628 - 1.072060I$ $a = 1.87038 - 0.10819I$ $b = 1.06339 + 0.93238I$	$-2.26306 - 0.50106I$	0
$u = -0.038288 + 1.076850I$ $a = -2.00469 - 0.14451I$ $b = -1.14404 + 0.88729I$	$-2.15487 + 3.80132I$	0
$u = -0.038288 - 1.076850I$ $a = -2.00469 + 0.14451I$ $b = -1.14404 - 0.88729I$	$-2.15487 - 3.80132I$	0
$u = 1.000080 + 0.415641I$ $a = 0.190224 - 0.401848I$ $b = -0.776510 - 0.859685I$	$5.94107 - 4.21086I$	0
$u = 1.000080 - 0.415641I$ $a = 0.190224 + 0.401848I$ $b = -0.776510 + 0.859685I$	$5.94107 + 4.21086I$	0
$u = -0.068173 + 1.089420I$ $a = 1.312090 + 0.193562I$ $b = 0.800595 - 0.509315I$	$-3.63493 + 0.26678I$	0
$u = -0.068173 - 1.089420I$ $a = 1.312090 - 0.193562I$ $b = 0.800595 + 0.509315I$	$-3.63493 - 0.26678I$	0
$u = -1.059830 + 0.271315I$ $a = -0.146768 + 0.536946I$ $b = -0.042981 + 0.289942I$	$2.65184 - 2.70646I$	0
$u = -1.059830 - 0.271315I$ $a = -0.146768 - 0.536946I$ $b = -0.042981 - 0.289942I$	$2.65184 + 2.70646I$	0
$u = 0.932509 + 0.609781I$ $a = -0.176126 + 0.610050I$ $b = 0.843789 + 0.786001I$	$3.49079 + 2.01874I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.932509 - 0.609781I$ $a = -0.176126 - 0.610050I$ $b = 0.843789 - 0.786001I$	$3.49079 - 2.01874I$	0
$u = -0.038605 + 0.865223I$ $a = 2.07405 + 0.46782I$ $b = 1.116710 - 0.780133I$	$-1.06238 + 3.87964I$	0
$u = -0.038605 - 0.865223I$ $a = 2.07405 - 0.46782I$ $b = 1.116710 + 0.780133I$	$-1.06238 - 3.87964I$	0
$u = -0.117598 + 1.165860I$ $a = -0.765345 - 0.241957I$ $b = -0.545559 + 0.203818I$	$-1.23236 - 1.99215I$	0
$u = -0.117598 - 1.165860I$ $a = -0.765345 + 0.241957I$ $b = -0.545559 - 0.203818I$	$-1.23236 + 1.99215I$	0
$u = 0.254162 + 1.169580I$ $a = 1.42656 + 0.33003I$ $b = 1.074210 - 0.664993I$	$-4.08137 + 1.75624I$	0
$u = 0.254162 - 1.169580I$ $a = 1.42656 - 0.33003I$ $b = 1.074210 + 0.664993I$	$-4.08137 - 1.75624I$	0
$u = 1.193540 + 0.156973I$ $a = -0.030280 - 0.244059I$ $b = -0.741582 - 0.928169I$	$6.96659 - 8.93778I$	0
$u = 1.193540 - 0.156973I$ $a = -0.030280 + 0.244059I$ $b = -0.741582 + 0.928169I$	$6.96659 + 8.93778I$	0
$u = 0.684171 + 0.997219I$ $a = -0.920037 - 0.922593I$ $b = -1.49530 + 0.18220I$	$-8.44397 + 2.73127I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.684171 - 0.997219I$ $a = -0.920037 + 0.922593I$ $b = -1.49530 - 0.18220I$	$-8.44397 - 2.73127I$	0
$u = 1.226440 + 0.090852I$ $a = 0.083985 + 0.223653I$ $b = 0.744800 + 0.946222I$	$5.3505 - 14.8237I$	0
$u = 1.226440 - 0.090852I$ $a = 0.083985 - 0.223653I$ $b = 0.744800 - 0.946222I$	$5.3505 + 14.8237I$	0
$u = 0.608248 + 1.097060I$ $a = 1.47037 + 0.24555I$ $b = 1.24440 - 1.01405I$	$1.78613 + 3.64779I$	0
$u = 0.608248 - 1.097060I$ $a = 1.47037 - 0.24555I$ $b = 1.24440 + 1.01405I$	$1.78613 - 3.64779I$	0
$u = 0.955531 + 0.867453I$ $a = 0.421538 + 0.428454I$ $b = 0.889319 - 0.081476I$	$1.203030 + 0.280799I$	0
$u = 0.955531 - 0.867453I$ $a = 0.421538 - 0.428454I$ $b = 0.889319 + 0.081476I$	$1.203030 - 0.280799I$	0
$u = 0.209561 + 1.287700I$ $a = -1.40191 - 0.27209I$ $b = -1.069990 + 0.612858I$	$-6.31133 - 2.87206I$	0
$u = 0.209561 - 1.287700I$ $a = -1.40191 + 0.27209I$ $b = -1.069990 - 0.612858I$	$-6.31133 + 2.87206I$	0
$u = 0.421956 + 1.251050I$ $a = -1.309050 - 0.347468I$ $b = -1.139520 + 0.620558I$	$-8.61831 + 4.70101I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.421956 - 1.251050I$ $a = -1.309050 + 0.347468I$ $b = -1.139520 - 0.620558I$	$-8.61831 - 4.70101I$	0
$u = 1.097080 + 0.747621I$ $a = -0.340634 - 0.290418I$ $b = -0.780833 + 0.108043I$	$0.10489 - 5.64548I$	0
$u = 1.097080 - 0.747621I$ $a = -0.340634 + 0.290418I$ $b = -0.780833 - 0.108043I$	$0.10489 + 5.64548I$	0
$u = 0.616875 + 1.179060I$ $a = -1.51838 - 0.12234I$ $b = -1.23374 + 1.07296I$	$3.47545 + 10.03930I$	0
$u = 0.616875 - 1.179060I$ $a = -1.51838 + 0.12234I$ $b = -1.23374 - 1.07296I$	$3.47545 - 10.03930I$	0
$u = 0.545484 + 1.277650I$ $a = 1.62855 + 0.02048I$ $b = 1.24027 - 1.11604I$	$-3.52822 + 12.78220I$	0
$u = 0.545484 - 1.277650I$ $a = 1.62855 - 0.02048I$ $b = 1.24027 + 1.11604I$	$-3.52822 - 12.78220I$	0
$u = 0.74868 + 1.21734I$ $a = 0.977453 + 0.416470I$ $b = 1.146590 - 0.421393I$	$-0.31629 + 6.51467I$	0
$u = 0.74868 - 1.21734I$ $a = 0.977453 - 0.416470I$ $b = 1.146590 + 0.421393I$	$-0.31629 - 6.51467I$	0
$u = 0.61794 + 1.32321I$ $a = -1.56379 + 0.03667I$ $b = -1.22324 + 1.12016I$	$3.2955 + 15.2496I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.61794 - 1.32321I$ $a = -1.56379 - 0.03667I$ $b = -1.22324 - 1.12016I$	$3.2955 - 15.2496I$	0
$u = 0.61054 + 1.35619I$ $a = 1.57770 - 0.06479I$ $b = 1.22494 - 1.12682I$	$1.3811 + 21.2028I$	0
$u = 0.61054 - 1.35619I$ $a = 1.57770 + 0.06479I$ $b = 1.22494 + 1.12682I$	$1.3811 - 21.2028I$	0
$u = 0.72941 + 1.29848I$ $a = -1.025890 - 0.333628I$ $b = -1.114340 + 0.474873I$	$-2.19090 + 12.78110I$	0
$u = 0.72941 - 1.29848I$ $a = -1.025890 + 0.333628I$ $b = -1.114340 - 0.474873I$	$-2.19090 - 12.78110I$	0
$u = 0.51432 + 1.39828I$ $a = 0.302087 + 0.428571I$ $b = 0.508626 + 0.140789I$	$-4.31937 - 2.33827I$	0
$u = 0.51432 - 1.39828I$ $a = 0.302087 - 0.428571I$ $b = 0.508626 - 0.140789I$	$-4.31937 + 2.33827I$	0
$u = -0.051370 + 0.503606I$ $a = -0.76050 - 1.80646I$ $b = -0.841572 - 0.127095I$	$-0.60859 - 4.25457I$	$-11.06711 + 6.14084I$
$u = -0.051370 - 0.503606I$ $a = -0.76050 + 1.80646I$ $b = -0.841572 + 0.127095I$	$-0.60859 + 4.25457I$	$-11.06711 - 6.14084I$
$u = 0.081734 + 0.272914I$ $a = -0.81815 + 2.41224I$ $b = 0.717888 + 0.241806I$	$-0.240752 + 0.181084I$	$-10.49440 + 0.66551I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \quad 0.081734 - 0.272914I$ $a = -0.81815 - 2.41224I$ $b = \quad 0.717888 - 0.241806I$	$-0.240752 - 0.181084I$	$-10.49440 - 0.66551I$
$u = \quad 0.189346$ $a = -2.01839$ $b = \quad 0.471438$	-0.703695	-14.0890
$u = -0.01449 + 1.83613I$ $a = -0.339222 - 0.183967I$ $b = -0.337779 - 0.000015I$	$0.32364 - 2.66479I$	0
$u = -0.01449 - 1.83613I$ $a = -0.339222 + 0.183967I$ $b = -0.337779 + 0.000015I$	$0.32364 + 2.66479I$	0
$u = \quad 0.24295 + 1.97827I$ $a = \quad 0.270137 + 0.224203I$ $b = \quad 0.323412 + 0.067264I$	$-0.69045 - 7.86547I$	0
$u = \quad 0.24295 - 1.97827I$ $a = \quad 0.270137 - 0.224203I$ $b = \quad 0.323412 - 0.067264I$	$-0.69045 + 7.86547I$	0

II. $I_2^u = \langle 8.17 \times 10^8 a^3 u^{29} + 5.12 \times 10^8 a^2 u^{29} + \cdots + 8.08 \times 10^8 a + 5.97 \times 10^8,\ 16u^{29}a^2 - 224u^{29}a + \cdots - 1933a + 10413,\ u^{30} + 9u^{29} + \cdots + 14u + 1\rangle$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_4 = \begin{pmatrix} a \\ -3.45633a^3u^{29} - 2.16552a^2u^{29} + \cdots - 3.41652a - 2.52681 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} 2.74813a^3u^{29} + 1.02874a^2u^{29} + \cdots + 1.18551a + 0.386995 \\ -0.708207a^3u^{29} - 1.13678a^2u^{29} + \cdots - 3.23100a - 2.13982 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -3.45633a^3u^{29} - 2.16552a^2u^{29} + \cdots - 2.41652a - 2.52681 \\ -0.708207a^3u^{29} - 1.13678a^2u^{29} + \cdots - 3.23100a - 2.13982 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.928707a^3u^{29} - 0.252178a^2u^{29} + \cdots - 2.45191a + 35.0430 \\ 0.287370a^3u^{29} + 0.396556a^2u^{29} + \cdots + 1.25130a + 0.993518 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -2.64161a^3u^{29} - 0.574265a^2u^{29} + \cdots - 2.03300a + 18.3367 \\ -1.42553a^3u^{29} + 0.0744681a^2u^{29} + \cdots + 1.67021a - 1.71277 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1.54187a^3u^{29} + 1.99595a^2u^{29} + \cdots + 2.55200a - 2.47821 \\ -0.436306a^3u^{29} + 0.954509a^2u^{29} + \cdots + 0.408271a + 0.432019 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -1.74875a^3u^{29} - 1.02431a^2u^{29} + \cdots - 1.18803a + 18.6307 \\ 1.11854a^3u^{29} + 0.475684a^2u^{29} + \cdots + 2.28116a + 3.63070 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -2.86730a^3u^{29} - 1.50000a^2u^{29} + \cdots - 2.46918a + 15.0000 \\ -1.11854a^3u^{29} - 0.475684a^2u^{29} + \cdots - 1.28116a - 3.63070 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{584865692}{118220557}u^{29}a^3 - \frac{110051764}{118220557}u^{29}a^2 + \cdots - \frac{581605732}{118220557}a - \frac{265571218}{118220557}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$(u^{30}+13u^{29}+\cdots+8u+1)^4$
c_2, c_5	$(u^{30}-3u^{29}+\cdots+6u-1)^4$
c_3, c_{10}	$u^{120}-u^{119}+\cdots-971506096u+277703647$
c_4, c_7	$u^{120}+7u^{119}+\cdots-34u+7$
c_6, c_9	$u^{120}+9u^{119}+\cdots+1147452u+251797$
c_8, c_{11}	$(u^{30}-9u^{29}+\cdots-14u+1)^4$
c_{12}	$(u^2-u+1)^{60}$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$(y^{30}+11y^{29}+\cdots-52y+1)^4$
c_2, c_5	$(y^{30}-13y^{29}+\cdots-8y+1)^4$
c_3, c_{10}	$y^{120}+41y^{119}+\cdots+4660341483603865276y+77119315557100609$
c_4, c_7	$y^{120}+25y^{119}+\cdots+3884y+49$
c_6, c_9	$y^{120}+51y^{119}+\cdots+3713334879894y+63401729209$
c_8, c_{11}	$(y^{30}+19y^{29}+\cdots-76y+1)^4$
c_{12}	$(y^2+y+1)^{60}$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.745428+0.678147I$ $a=-0.115504+0.906628I$ $b=-0.358285+1.042520I$	$2.91288-3.27691I$	$-2.14197+4.25187I$
$u=-0.745428+0.678147I$ $a=-0.870330+0.260038I$ $b=0.088818-0.265941I$	$2.91288-3.27691I$	$-2.14197+4.25187I$
$u=-0.745428+0.678147I$ $a=-0.062729+0.457190I$ $b=-0.431760-0.964251I$	$2.91288-7.33668I$	$-2.14197+11.18007I$
$u=-0.745428+0.678147I$ $a=1.56601-0.18677I$ $b=1.23903+0.80932I$	$2.91288-7.33668I$	$-2.14197+11.18007I$
$u=-0.745428-0.678147I$ $a=-0.115504-0.906628I$ $b=-0.358285-1.042520I$	$2.91288+3.27691I$	$-2.14197-4.25187I$
$u=-0.745428-0.678147I$ $a=-0.870330-0.260038I$ $b=0.088818+0.265941I$	$2.91288+3.27691I$	$-2.14197-4.25187I$
$u=-0.745428-0.678147I$ $a=-0.062729-0.457190I$ $b=-0.431760+0.964251I$	$2.91288+7.33668I$	$-2.14197-11.18007I$
$u=-0.745428-0.678147I$ $a=1.56601+0.18677I$ $b=1.23903-0.80932I$	$2.91288+7.33668I$	$-2.14197-11.18007I$
$u=0.294292+0.972034I$ $a=0.236328+0.015046I$ $b=0.037315-1.389410I$	$2.16449+7.46442I$	$-6.77551-6.94723I$
$u=0.294292+0.972034I$ $a=1.10990+1.60858I$ $b=1.28896+1.90166I$	$2.16449+11.52420I$	$-6.7755-13.8754I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.294292 + 0.972034I$ $a = -2.39204 + 0.93244I$ $b = -0.232185 + 0.260308I$	$2.16449 + 11.52420I$	$-6.7755 - 13.8754I$
$u = 0.294292 + 0.972034I$ $a = 2.60533 - 0.17518I$ $b = 1.30661 - 0.60677I$	$2.16449 + 7.46442I$	$-6.77551 - 6.94723I$
$u = 0.294292 - 0.972034I$ $a = 0.236328 - 0.015046I$ $b = 0.037315 + 1.389410I$	$2.16449 - 7.46442I$	$-6.77551 + 6.94723I$
$u = 0.294292 - 0.972034I$ $a = 1.10990 - 1.60858I$ $b = 1.28896 - 1.90166I$	$2.16449 - 11.52420I$	$-6.7755 + 13.8754I$
$u = 0.294292 - 0.972034I$ $a = -2.39204 - 0.93244I$ $b = -0.232185 - 0.260308I$	$2.16449 - 11.52420I$	$-6.7755 + 13.8754I$
$u = 0.294292 - 0.972034I$ $a = 2.60533 + 0.17518I$ $b = 1.30661 + 0.60677I$	$2.16449 - 7.46442I$	$-6.77551 + 6.94723I$
$u = 0.291928 + 0.912894I$ $a = -0.220592 - 0.354150I$ $b = -0.019177 + 1.253670I$	$4.20602 + 1.61366I$	$-3.27196 - 2.59272I$
$u = 0.291928 + 0.912894I$ $a = -0.91060 - 1.59867I$ $b = -1.14023 - 1.89433I$	$4.20602 + 5.67342I$	$-3.27196 - 9.52092I$
$u = 0.291928 + 0.912894I$ $a = 2.44781 - 0.82708I$ $b = 0.202872 - 0.295939I$	$4.20602 + 5.67342I$	$-3.27196 - 9.52092I$
$u = 0.291928 + 0.912894I$ $a = -2.64877 + 0.23577I$ $b = -1.40897 + 0.65324I$	$4.20602 + 1.61366I$	$-3.27196 - 2.59272I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.291928 - 0.912894I$ $a = -0.220592 + 0.354150I$ $b = -0.019177 - 1.253670I$	$4.20602 - 1.61366I$	$-3.27196 + 2.59272I$
$u = 0.291928 - 0.912894I$ $a = -0.91060 + 1.59867I$ $b = -1.14023 + 1.89433I$	$4.20602 - 5.67342I$	$-3.27196 + 9.52092I$
$u = 0.291928 - 0.912894I$ $a = 2.44781 + 0.82708I$ $b = 0.202872 + 0.295939I$	$4.20602 - 5.67342I$	$-3.27196 + 9.52092I$
$u = 0.291928 - 0.912894I$ $a = -2.64877 - 0.23577I$ $b = -1.40897 - 0.65324I$	$4.20602 - 1.61366I$	$-3.27196 + 2.59272I$
$u = -0.818708 + 0.441278I$ $a = -0.039565 - 0.832252I$ $b = 0.397332 - 1.073180I$	$3.53182 + 1.78757I$	$-0.90509 - 1.30321I$
$u = -0.818708 + 0.441278I$ $a = 0.672165 - 0.422997I$ $b = -0.251374 + 0.390044I$	$3.53182 + 1.78757I$	$-0.90509 - 1.30321I$
$u = -0.818708 + 0.441278I$ $a = -1.178310 + 0.360965I$ $b = -1.051790 - 0.751216I$	$3.53182 - 2.27220I$	$-0.90509 + 5.62499I$
$u = -0.818708 + 0.441278I$ $a = -0.225066 - 0.281188I$ $b = 0.387199 + 0.966382I$	$3.53182 - 2.27220I$	$-0.90509 + 5.62499I$
$u = -0.818708 - 0.441278I$ $a = -0.039565 + 0.832252I$ $b = 0.397332 + 1.073180I$	$3.53182 - 1.78757I$	$-0.90509 + 1.30321I$
$u = -0.818708 - 0.441278I$ $a = 0.672165 + 0.422997I$ $b = -0.251374 - 0.390044I$	$3.53182 - 1.78757I$	$-0.90509 + 1.30321I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.818708-0.441278I$ $a=-1.178310-0.360965I$ $b=-1.051790+0.751216I$	$3.53182+2.27220I$	$-0.90509-5.62499I$
$u=-0.818708-0.441278I$ $a=-0.225066+0.281188I$ $b=0.387199-0.966382I$	$3.53182+2.27220I$	$-0.90509-5.62499I$
$u=-0.891676$ $a=-0.117329+0.410774I$ $b=-0.598534-0.671802I$	$2.74589-2.02988I$	$-6.46536+3.46410I$
$u=-0.891676$ $a=-0.117329-0.410774I$ $b=-0.598534+0.671802I$	$2.74589+2.02988I$	$-6.46536-3.46410I$
$u=-0.891676$ $a=-0.242167+0.211893I$ $b=0.429079+0.965307I$	$2.74589-2.02988I$	$-6.46536+3.46410I$
$u=-0.891676$ $a=-0.242167-0.211893I$ $b=0.429079-0.965307I$	$2.74589+2.02988I$	$-6.46536-3.46410I$
$u=0.149725+0.869141I$ $a=0.81554+1.25207I$ $b=0.114962-0.915174I$	$-2.09915-1.13039I$	$-3.50947-3.70955I$
$u=0.149725+0.869141I$ $a=0.46776+2.16783I$ $b=0.73674+2.30931I$	$-2.09915+2.92938I$	$-3.50947-10.63776I$
$u=0.149725+0.869141I$ $a=2.77923-0.62877I$ $b=1.77875-0.93339I$	$-2.09915-1.13039I$	$-3.50947-3.70955I$
$u=0.149725+0.869141I$ $a=-2.80494+0.63368I$ $b=-0.082692+0.254969I$	$-2.09915+2.92938I$	$-3.50947-10.63776I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.149725 - 0.869141I$ $a = 0.81554 - 1.25207I$ $b = 0.114962 + 0.915174I$	$-2.09915 + 1.13039I$	$-3.50947 + 3.70955I$
$u = 0.149725 - 0.869141I$ $a = 0.46776 - 2.16783I$ $b = 0.73674 - 2.30931I$	$-2.09915 - 2.92938I$	$-3.50947 + 10.63776I$
$u = 0.149725 - 0.869141I$ $a = 2.77923 + 0.62877I$ $b = 1.77875 + 0.93339I$	$-2.09915 + 1.13039I$	$-3.50947 + 3.70955I$
$u = 0.149725 - 0.869141I$ $a = -2.80494 - 0.63368I$ $b = -0.082692 - 0.254969I$	$-2.09915 - 2.92938I$	$-3.50947 + 10.63776I$
$u = -0.220472 + 1.164690I$ $a = -0.008805 + 1.119850I$ $b = -0.188691 - 0.182477I$	$-4.71423 + 0.51291I$	$-15.7339 + 0.6888I$
$u = -0.220472 + 1.164690I$ $a = 1.67811 - 0.10742I$ $b = 1.55646 + 0.07761I$	$-4.71423 + 0.51291I$	$-15.7339 + 0.I$
$u = -0.220472 + 1.164690I$ $a = -1.83754 - 0.95066I$ $b = -1.52331 - 1.65289I$	$-4.71423 - 3.54686I$	$-15.7339 + 7.6170I$
$u = -0.220472 + 1.164690I$ $a = 1.87967 - 1.00121I$ $b = 0.748609 + 0.520804I$	$-4.71423 - 3.54686I$	$-15.7339 + 7.6170I$
$u = -0.220472 - 1.164690I$ $a = -0.008805 - 1.119850I$ $b = -0.188691 + 0.182477I$	$-4.71423 - 0.51291I$	$-15.7339 - 0.6888I$
$u = -0.220472 - 1.164690I$ $a = 1.67811 + 0.10742I$ $b = 1.55646 - 0.07761I$	$-4.71423 - 0.51291I$	$-15.7339 + 0.I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.220472-1.164690I$ $a=-1.83754+0.95066I$ $b=-1.52331+1.65289I$	$-4.71423+3.54686I$	$-15.7339-7.6170I$
$u=-0.220472-1.164690I$ $a=1.87967+1.00121I$ $b=0.748609-0.520804I$	$-4.71423+3.54686I$	$-15.7339-7.6170I$
$u=-1.190060+0.051071I$ $a=-0.471853-0.295670I$ $b=-0.694431-1.035650I$	$4.78890-4.41485I$	$3.36478+7.76487I$
$u=-1.190060+0.051071I$ $a=0.356859-0.397473I$ $b=0.626117-1.069100I$	$4.78890-0.35509I$	$3.36478+0.83667I$
$u=-1.190060+0.051071I$ $a=0.277507-0.061145I$ $b=-0.286132+0.813028I$	$4.78890-0.35509I$	$3.36478+0.83667I$
$u=-1.190060+0.051071I$ $a=-0.242505-0.024398I$ $b=0.302671+0.869252I$	$4.78890-4.41485I$	$3.36478+7.76487I$
$u=-1.190060-0.051071I$ $a=-0.471853+0.295670I$ $b=-0.694431+1.035650I$	$4.78890+4.41485I$	$3.36478-7.76487I$
$u=-1.190060-0.051071I$ $a=0.356859+0.397473I$ $b=0.626117+1.069100I$	$4.78890+0.35509I$	$3.36478-0.83667I$
$u=-1.190060-0.051071I$ $a=0.277507+0.061145I$ $b=-0.286132-0.813028I$	$4.78890+0.35509I$	$3.36478-0.83667I$
$u=-1.190060-0.051071I$ $a=-0.242505+0.024398I$ $b=0.302671-0.869252I$	$4.78890+4.41485I$	$3.36478-7.76487I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.302753 + 0.680971I$ $a = -0.247478 - 1.106090I$ $b = -0.76389 - 1.50753I$	$4.86810 + 1.19187I$	$-1.39665 - 6.55222I$
$u = 0.302753 + 0.680971I$ $a = 0.407661 - 1.153260I$ $b = 0.174799 + 1.043930I$	$4.86810 - 2.86790I$	$-1.39665 + 0.37598I$
$u = 0.302753 + 0.680971I$ $a = 2.38187 - 0.58803I$ $b = 0.117023 - 0.473198I$	$4.86810 + 1.19187I$	$-1.39665 - 6.55222I$
$u = 0.302753 + 0.680971I$ $a = -2.94201 + 0.15189I$ $b = -1.56673 + 0.50663I$	$4.86810 - 2.86790I$	$-1.39665 + 0.37598I$
$u = 0.302753 - 0.680971I$ $a = -0.247478 + 1.106090I$ $b = -0.76389 + 1.50753I$	$4.86810 - 1.19187I$	$-1.39665 + 6.55222I$
$u = 0.302753 - 0.680971I$ $a = 0.407661 + 1.153260I$ $b = 0.174799 - 1.043930I$	$4.86810 + 2.86790I$	$-1.39665 - 0.37598I$
$u = 0.302753 - 0.680971I$ $a = 2.38187 + 0.58803I$ $b = 0.117023 + 0.473198I$	$4.86810 - 1.19187I$	$-1.39665 + 6.55222I$
$u = 0.302753 - 0.680971I$ $a = -2.94201 - 0.15189I$ $b = -1.56673 - 0.50663I$	$4.86810 + 2.86790I$	$-1.39665 - 0.37598I$
$u = -0.398348 + 1.237590I$ $a = -1.089300 - 0.011224I$ $b = -0.878929 - 0.257055I$	$-1.22803 - 2.46934I$	$-8.00000 + 0.I$
$u = -0.398348 + 1.237590I$ $a = -1.50729 + 0.46745I$ $b = -0.861802 - 0.773540I$	$-1.22803 - 6.52911I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.398348+1.237590I$ $a=\ 0.201511-0.345827I$ $b=\ 0.220437+0.358276I$	$-1.22803-2.46934I$	$-8.00000+0.I$
$u=-0.398348+1.237590I$ $a=\ 1.64197+0.47992I$ $b=\ 1.27871+1.29320I$	$-1.22803-6.52911I$	0
$u=-0.398348-1.237590I$ $a=-1.089300+0.011224I$ $b=-0.878929+0.257055I$	$-1.22803+2.46934I$	$-8.00000+0.I$
$u=-0.398348-1.237590I$ $a=-1.50729-0.46745I$ $b=-0.861802+0.773540I$	$-1.22803+6.52911I$	0
$u=-0.398348-1.237590I$ $a=\ 0.201511+0.345827I$ $b=\ 0.220437-0.358276I$	$-1.22803+2.46934I$	$-8.00000+0.I$
$u=-0.398348-1.237590I$ $a=\ 1.64197-0.47992I$ $b=\ 1.27871-1.29320I$	$-1.22803+6.52911I$	0
$u=\ 0.332931+0.577334I$ $a=\ 0.108408+0.696345I$ $b=\ 0.76800+1.28459I$	$3.27963-4.60146I$	$-3.62959-1.24713I$
$u=\ 0.332931+0.577334I$ $a=-0.75982+1.30663I$ $b=-0.231941-1.021460I$	$3.27963-8.66122I$	$-3.62959+5.68107I$
$u=\ 0.332931+0.577334I$ $a=-2.36545+0.61202I$ $b=-0.120017+0.576649I$	$3.27963-4.60146I$	$-3.62959-1.24713I$
$u=\ 0.332931+0.577334I$ $a=\ 3.02142-0.00615I$ $b=\ 1.51983-0.47033I$	$3.27963-8.66122I$	$-3.62959+5.68107I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.332931 - 0.577334I$ $a = 0.108408 - 0.696345I$ $b = 0.76800 - 1.28459I$	$3.27963 + 4.60146I$	$-3.62959 + 1.24713I$
$u = 0.332931 - 0.577334I$ $a = -0.75982 - 1.30663I$ $b = -0.231941 + 1.021460I$	$3.27963 + 8.66122I$	$-3.62959 - 5.68107I$
$u = 0.332931 - 0.577334I$ $a = -2.36545 - 0.61202I$ $b = -0.120017 - 0.576649I$	$3.27963 + 4.60146I$	$-3.62959 + 1.24713I$
$u = 0.332931 - 0.577334I$ $a = 3.02142 + 0.00615I$ $b = 1.51983 + 0.47033I$	$3.27963 + 8.66122I$	$-3.62959 - 5.68107I$
$u = -0.297124 + 1.357320I$ $a = -0.598970 + 0.626647I$ $b = -0.326366 - 0.255348I$	$-3.21957 - 6.47968I$	0
$u = -0.297124 + 1.357320I$ $a = 1.245450 + 0.363321I$ $b = 1.116150 + 0.632073I$	$-3.21957 - 6.47968I$	0
$u = -0.297124 + 1.357320I$ $a = -1.37775 - 0.67422I$ $b = -1.09901 - 1.49436I$	$-3.21957 - 10.53940I$	0
$u = -0.297124 + 1.357320I$ $a = 1.91185 - 0.38063I$ $b = 1.030370 + 0.622017I$	$-3.21957 - 10.53940I$	0
$u = -0.297124 - 1.357320I$ $a = -0.598970 - 0.626647I$ $b = -0.326366 + 0.255348I$	$-3.21957 + 6.47968I$	0
$u = -0.297124 - 1.357320I$ $a = 1.245450 - 0.363321I$ $b = 1.116150 - 0.632073I$	$-3.21957 + 6.47968I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.297124-1.357320I$ $a=-1.37775+0.67422I$ $b=-1.09901+1.49436I$	$-3.21957+10.53940I$	0
$u=-0.297124-1.357320I$ $a=1.91185+0.38063I$ $b=1.030370-0.622017I$	$-3.21957+10.53940I$	0
$u=-0.45484+1.37508I$ $a=-0.862383-0.321092I$ $b=-0.713383-0.653883I$	$-1.64738-2.69431I$	0
$u=-0.45484+1.37508I$ $a=0.663793-0.253155I$ $b=0.389845+0.356252I$	$-1.64738-2.69431I$	0
$u=-0.45484+1.37508I$ $a=1.316960+0.363578I$ $b=1.00604+1.26785I$	$-1.64738-6.75407I$	0
$u=-0.45484+1.37508I$ $a=-1.71498+0.09553I$ $b=-1.102030-0.838840I$	$-1.64738-6.75407I$	0
$u=-0.45484-1.37508I$ $a=-0.862383+0.321092I$ $b=-0.713383+0.653883I$	$-1.64738+2.69431I$	0
$u=-0.45484-1.37508I$ $a=0.663793+0.253155I$ $b=0.389845-0.356252I$	$-1.64738+2.69431I$	0
$u=-0.45484-1.37508I$ $a=1.316960-0.363578I$ $b=1.00604-1.26785I$	$-1.64738+6.75407I$	0
$u=-0.45484-1.37508I$ $a=-1.71498-0.09553I$ $b=-1.102030+0.838840I$	$-1.64738+6.75407I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.63185+1.30721I$ $a=-0.992305-0.020078I$ $b=-0.759553-1.110260I$	$0.96708-6.00374I$	0
$u=-0.63185+1.30721I$ $a=-0.858500+0.107627I$ $b=-0.435140-0.309198I$	$0.96708-1.94398I$	0
$u=-0.63185+1.30721I$ $a=\ \ 0.338686+0.454279I$ $b=\ \ 0.277377+0.816791I$	$0.96708-1.94398I$	0
$u=-0.63185+1.30721I$ $a=\ \ 1.73884+0.18930I$ $b=\ \ 1.27802+0.99309I$	$0.96708-6.00374I$	0
$u=-0.63185-1.30721I$ $a=-0.992305+0.020078I$ $b=-0.759553+1.110260I$	$0.96708+6.00374I$	0
$u=-0.63185-1.30721I$ $a=-0.858500-0.107627I$ $b=-0.435140+0.309198I$	$0.96708+1.94398I$	0
$u=-0.63185-1.30721I$ $a=\ \ 0.338686-0.454279I$ $b=\ \ 0.277377-0.816791I$	$0.96708+1.94398I$	0
$u=-0.63185-1.30721I$ $a=\ \ 1.73884-0.18930I$ $b=\ \ 1.27802-0.99309I$	$0.96708+6.00374I$	0
$u=-0.61552+1.38013I$ $a=\ \ 1.022350+0.159585I$ $b=\ \ 0.79145+1.18081I$	$0.41135-10.76760I$	0
$u=-0.61552+1.38013I$ $a=\ \ 0.852380-0.139543I$ $b=\ \ 0.437610+0.336679I$	$0.41135-6.70787I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.61552+1.38013I$ $a=-0.487473-0.510340I$ $b=-0.401949-0.865561I$	$0.41135-6.70787I$	0
$u=-0.61552+1.38013I$ $a=-1.76762-0.15066I$ $b=-1.26731-0.94725I$	$0.41135-10.76760I$	0
$u=-0.61552-1.38013I$ $a=1.022350-0.159585I$ $b=0.79145-1.18081I$	$0.41135+10.76760I$	0
$u=-0.61552-1.38013I$ $a=0.852380+0.139543I$ $b=0.437610-0.336679I$	$0.41135+6.70787I$	0
$u=-0.61552-1.38013I$ $a=-0.487473+0.510340I$ $b=-0.401949+0.865561I$	$0.41135+6.70787I$	0
$u=-0.61552-1.38013I$ $a=-1.76762+0.15066I$ $b=-1.26731+0.94725I$	$0.41135+10.76760I$	0
$u=-0.106889$ $a=8.36050+2.31316I$ $b=-0.274582+0.980651I$	$-1.58088+2.02988I$	$-7.94876-3.46410I$
$u=-0.106889$ $a=8.36050-2.31316I$ $b=-0.274582-0.980651I$	$-1.58088-2.02988I$	$-7.94876+3.46410I$
$u=-0.106889$ $a=-1.64586+9.31693I$ $b=0.922993+0.142430I$	$-1.58088+2.02988I$	$-7.94876-3.46410I$
$u=-0.106889$ $a=-1.64586-9.31693I$ $b=0.922993-0.142430I$	$-1.58088-2.02988I$	$-7.94876+3.46410I$

III. $I_3^u = \langle 2.06\times 10^{15}u^{35}+3.18\times 10^{16}u^{34}+\cdots+1.33\times 10^{16}b+3.93\times 10^{16},\ -2.49\times 10^{16}u^{35}-3.52\times 10^{17}u^{34}+\cdots+9.34\times 10^{16}a-1.32\times 10^{18},\ u^{36}+15u^{35}+\cdots+100u+7\rangle$

(i) Arc colorings

$$a_8 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_9 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_4 = \begin{pmatrix}0.266446u^{35}+3.77319u^{34}+\cdots+184.155u+14.1541\\-0.154233u^{35}-2.38276u^{34}+\cdots-24.9690u-2.94475\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}u\\u\end{pmatrix}$$
$$a_5 = \begin{pmatrix}0.197179u^{35}+2.85858u^{34}+\cdots+196.634u+15.2337\\-0.223499u^{35}-3.29737u^{34}+\cdots-12.4905u-1.86512\end{pmatrix}$$
$$a_3 = \begin{pmatrix}0.167336u^{35}+2.43145u^{34}+\cdots+179.671u+12.7738\\-0.132564u^{35}-1.85500u^{34}+\cdots-11.1723u-1.93041\end{pmatrix}$$
$$a_7 = \begin{pmatrix}0.282905u^{35}+4.39197u^{34}+\cdots+74.1899u+1.80195\\-0.220213u^{35}-2.93459u^{34}+\cdots-45.9880u-3.52183\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-0.177239u^{35}-2.87128u^{34}+\cdots-136.709u-10.2763\\0.184217u^{35}+2.73494u^{34}+\cdots+41.2970u+4.07168\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-0.196470u^{35}-2.98273u^{34}+\cdots-59.8797u-0.201969\\0.455045u^{35}+6.44441u^{34}+\cdots+33.8097u+2.14148\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-0.184369u^{35}-2.58115u^{34}+\cdots-91.7208u-13.6079\\-0.689759u^{35}-9.66523u^{34}+\cdots-41.5981u-1.85154\end{pmatrix}$$
$$a_2 = \begin{pmatrix}0.448887u^{35}+6.26839u^{34}+\cdots-84.0461u-13.8570\\0.317953u^{35}+4.14359u^{34}+\cdots-38.5208u-1.96386\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $=$
$$-\frac{18462614986414268}{13336038075042241}u^{35}-\frac{18237280252242258}{1025849082695557}u^{34}+\cdots+\frac{4166442410187511668}{13336038075042241}u+\frac{335464906964536671}{13336038075042241}$$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{36} - 20u^{35} + \cdots - 286u + 9$
c_2	$u^{36} + 8u^{35} + \cdots - 2u + 3$
c_3, c_{10}	$u^{36} + 6u^{34} + \cdots - 16u + 7$
c_4, c_7	$u^{36} + 2u^{34} + \cdots + 2u + 1$
c_5	$u^{36} - 8u^{35} + \cdots + 2u + 3$
c_6, c_9	$u^{36} - 4u^{35} + \cdots - 7u + 1$
c_8	$u^{36} + 15u^{35} + \cdots + 100u + 7$
c_{11}	$u^{36} - 15u^{35} + \cdots - 100u + 7$
c_{12}	$u^{36} - 11u^{35} + \cdots - 29u + 7$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{36} + 4y^{35} + \cdots - 15214y + 81$
c_2, c_5	$y^{36} - 20y^{35} + \cdots - 286y + 9$
c_3, c_{10}	$y^{36} + 12y^{35} + \cdots + 444y + 49$
c_4, c_7	$y^{36} + 4y^{35} + \cdots + 18y + 1$
c_6, c_9	$y^{36} + 20y^{35} + \cdots + 67y + 1$
c_8, c_{11}	$y^{36} + 29y^{35} + \cdots + 2040y + 49$
c_{12}	$y^{36} + 5y^{35} + \cdots + 909y + 49$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.996191+0.247442I$ $a=\ 0.242980-0.063848I$ $b=\ 0.485840+0.921857I$	$3.78449-0.74247I$	$-1.56067+1.04603I$
$u=-0.996191-0.247442I$ $a=\ 0.242980+0.063848I$ $b=\ 0.485840-0.921857I$	$3.78449+0.74247I$	$-1.56067-1.04603I$
$u=\ 0.202230+0.888062I$ $a=-2.05913-0.33443I$ $b=-0.818069-0.973002I$	$2.13905+10.41710I$	$-7.77869-5.57290I$
$u=\ 0.202230-0.888062I$ $a=-2.05913+0.33443I$ $b=-0.818069+0.973002I$	$2.13905-10.41710I$	$-7.77869+5.57290I$
$u=-0.721359+0.483077I$ $a=-0.622746+0.296070I$ $b=-0.524683-0.936490I$	$3.06329-5.44861I$	$-2.75970+7.29994I$
$u=-0.721359-0.483077I$ $a=-0.622746-0.296070I$ $b=-0.524683+0.936490I$	$3.06329+5.44861I$	$-2.75970-7.29994I$
$u=\ 0.002544+0.862070I$ $a=-1.99921-0.20416I$ $b=-0.752089-1.072900I$	$-2.41296+1.98163I$	$-9.73483-4.24965I$
$u=\ 0.002544-0.862070I$ $a=-1.99921+0.20416I$ $b=-0.752089+1.072900I$	$-2.41296-1.98163I$	$-9.73483+4.24965I$
$u=\ 0.173271+0.826969I$ $a=\ 2.09954+0.30039I$ $b=\ 0.783444+0.972000I$	$4.10139+4.56262I$	$-5.09667-1.69067I$
$u=\ 0.173271-0.826969I$ $a=\ 2.09954-0.30039I$ $b=\ 0.783444-0.972000I$	$4.10139-4.56262I$	$-5.09667+1.69067I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.012059+1.195300I$ $a=\ 0.650787+0.463736I$ $b=\ 0.152926+0.596698I$	$-3.52475-2.14811I$	$-12.69778+0.I$
$u=-0.012059-1.195300I$ $a=\ 0.650787-0.463736I$ $b=\ 0.152926-0.596698I$	$-3.52475+2.14811I$	$-12.69778+0.I$
$u=-1.074470+0.525760I$ $a=\ 0.073188+0.396115I$ $b=-0.646081+0.637192I$	$2.85779-1.66915I$	0
$u=-1.074470-0.525760I$ $a=\ 0.073188-0.396115I$ $b=-0.646081-0.637192I$	$2.85779+1.66915I$	0
$u=-1.193700+0.152435I$ $a=-0.001017-0.185478I$ $b=\ 0.461093-0.779359I$	$3.83728+3.26733I$	0
$u=-1.193700-0.152435I$ $a=-0.001017+0.185478I$ $b=\ 0.461093+0.779359I$	$3.83728-3.26733I$	0
$u=-0.672566+0.999759I$ $a=\ 0.929796-0.910897I$ $b=\ 1.47756+0.19852I$	$-8.48858-2.70245I$	$-70.7021-38.7120I$
$u=-0.672566-0.999759I$ $a=\ 0.929796+0.910897I$ $b=\ 1.47756-0.19852I$	$-8.48858+2.70245I$	$-70.7021+38.7120I$
$u=-0.565558+1.258000I$ $a=-0.732745+0.020751I$ $b=-0.567765-0.504742I$	$-0.91986-3.39116I$	0
$u=-0.565558-1.258000I$ $a=-0.732745-0.020751I$ $b=-0.567765+0.504742I$	$-0.91986+3.39116I$	0

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.629437+1.227540I$ $a=-1.244920+0.043396I$ $b=-0.996744-0.895845I$	$0.35014-4.53280I$	0
$u=-0.629437-1.227540I$ $a=-1.244920-0.043396I$ $b=-0.996744+0.895845I$	$0.35014+4.53280I$	0
$u=-0.412167+1.324670I$ $a=-1.57926-0.12584I$ $b=-1.05789-1.08667I$	$-1.76384-9.52413I$	0
$u=-0.412167-1.324670I$ $a=-1.57926+0.12584I$ $b=-1.05789+1.08667I$	$-1.76384+9.52413I$	0
$u=-0.61022+1.32214I$ $a=1.327960+0.097645I$ $b=0.987584+1.001710I$	$0.14432-9.54443I$	0
$u=-0.61022-1.32214I$ $a=1.327960-0.097645I$ $b=0.987584-1.001710I$	$0.14432+9.54443I$	0
$u=-0.47918+1.37850I$ $a=1.49042+0.16195I$ $b=1.03015+1.06924I$	$-1.09440-5.99264I$	0
$u=-0.47918-1.37850I$ $a=1.49042-0.16195I$ $b=1.03015-1.06924I$	$-1.09440+5.99264I$	0
$u=-0.013410+0.529874I$ $a=2.36343-0.26906I$ $b=0.617859+0.941163I$	$4.65001-0.00873I$	$-2.39720-0.09706I$
$u=-0.013410-0.529874I$ $a=2.36343+0.26906I$ $b=0.617859-0.941163I$	$4.65001+0.00873I$	$-2.39720+0.09706I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.098035+0.188990I$ $a=-3.10186+3.29731I$ $b=-0.541261-0.894912I$	$3.08017-5.69957I$	$-4.85575+6.84399I$
$u=-0.098035-0.188990I$ $a=-3.10186-3.29731I$ $b=-0.541261+0.894912I$	$3.08017+5.69957I$	$-4.85575-6.84399I$
$u=-0.35277+1.80568I$ $a=-0.402295-0.126543I$ $b=-0.269426-0.301712I$	$0.52226-2.86902I$	0
$u=-0.35277-1.80568I$ $a=-0.402295+0.126543I$ $b=-0.269426+0.301712I$	$0.52226+2.86902I$	0
$u=-0.04692+1.85264I$ $a=0.350804+0.225457I$ $b=0.177550+0.325681I$	$-0.45621-7.92269I$	0
$u=-0.04692-1.85264I$ $a=0.350804-0.225457I$ $b=0.177550-0.325681I$	$-0.45621+7.92269I$	0

IV. $I_4^u = \langle -8a^3u - 3a^2u + \cdots - 37a + 41,\ -a^3u - 3a^2u + \cdots - a + 3,\ u^2 + 1 \rangle$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

$$a_4 = \begin{pmatrix} a \\ 0.160000a^3u + 0.0600000a^2u + \cdots + 0.740000a - 0.820000 \end{pmatrix}$$

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

$$a_5 = \begin{pmatrix} 0.160000a^3u + 0.0600000a^2u + \cdots + 0.740000a - 0.820000 \\ 0.320000a^3u + 0.120000a^2u + \cdots + 0.480000a - 1.64000 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 0.160000a^3u + 0.0600000a^2u + \cdots + 0.740000a - 0.820000 \\ 0.320000a^3u + 0.120000a^2u + \cdots + 0.480000a - 1.64000 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -0.0200000a^3u + 0.180000a^2u + \cdots + 0.220000a + 1.04000 \\ 0.260000a^3u + 0.660000a^2u + \cdots + 1.14000a + 0.480000 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -0.120000a^3u - 0.420000a^2u + \cdots - 1.18000a - 0.260000 \\ -0.400000a^3u - 0.900000a^2u + \cdots - 2.10000a + 0.300000 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0.180000a^3u + 0.380000a^2u + \cdots + 0.0200000a + 0.640000 \\ 0.220000a^3u + 0.0200000a^2u + \cdots - 0.420000a + 0.560000 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 0.120000a^3u + 0.420000a^2u + \cdots + 1.18000a + 0.260000 \\ \frac{2}{5}a^3u + \frac{9}{10}a^2u + \cdots + \frac{21}{10}a - \frac{3}{10} \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.0400000a^3u - 0.360000a^2u + \cdots - 0.440000a - 1.08000 \\ -0.0800000a^3u - 0.780000a^2u + \cdots - 1.62000a - 1.34000 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{4}{25}a^3u + \frac{28}{25}a^3 - \frac{36}{25}a^2u + \frac{48}{25}a^2 - \frac{92}{25}au - \frac{44}{25}a + \frac{56}{25}u - \frac{408}{25}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_5	$(y-1)^8$
c_3, c_{10}	$y^8 + 2y^7 + 5y^6 + 12y^5 + 26y^4 + 30y^3 + 32y^2 + 8y + 1$
c_4, c_7	$y^8 - 2y^7 + 5y^6 - 12y^5 + 26y^4 - 30y^3 + 32y^2 - 8y + 1$
c_6, c_9	$(y^2 - y + 1)^4$
c_8, c_{11}	$(y+1)^8$
c_{12}	$(y^2 + y + 1)^4$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = 1.144860 + 0.022144I$ $b = 0.76652 - 1.24437I$	$-3.28987 + 2.02988I$	$-14.0000 - 3.4641I$
$u = 1.000000I$ $a = -0.746378 + 0.279522I$ $b = -0.916440 + 0.695963I$	$-3.28987 - 2.02988I$	$-14.0000 + 3.4641I$
$u = 1.000000I$ $a = 1.11240 + 1.08650I$ $b = 0.416440 + 0.170063I$	$-3.28987 - 2.02988I$	$-14.0000 + 3.4641I$
$u = 1.000000I$ $a = -2.51089 - 0.38817I$ $b = -1.266520 + 0.378347I$	$-3.28987 + 2.02988I$	$-14.0000 - 3.4641I$
$u = -1.000000I$ $a = 1.144860 - 0.022144I$ $b = 0.76652 + 1.24437I$	$-3.28987 - 2.02988I$	$-14.0000 + 3.4641I$
$u = -1.000000I$ $a = -0.746378 - 0.279522I$ $b = -0.916440 - 0.695963I$	$-3.28987 + 2.02988I$	$-14.0000 - 3.4641I$
$u = -1.000000I$ $a = 1.11240 - 1.08650I$ $b = 0.416440 - 0.170063I$	$-3.28987 + 2.02988I$	$-14.0000 - 3.4641I$
$u = -1.000000I$ $a = -2.51089 + 0.38817I$ $b = -1.266520 - 0.378347I$	$-3.28987 - 2.02988I$	$-14.0000 + 3.4641I$

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^8)(u^{30}+13u^{29}+\cdots+8u+1)^4(u^{36}-20u^{35}+\cdots-286u+9)$ $\cdot(u^{66}+31u^{65}+\cdots+17676u+2704)$
c_2	$((u-1)^8)(u^{30}-3u^{29}+\cdots+6u-1)^4(u^{36}+8u^{35}+\cdots-2u+3)$ $\cdot(u^{66}+13u^{65}+\cdots-738u-52)$
c_3, c_{10}	$(u^8+u^6+\cdots-2u+1)(u^{36}+6u^{34}+\cdots-16u+7)$ $\cdot(u^{66}+13u^{64}+\cdots+37u-181)$ $\cdot(u^{120}-u^{119}+\cdots-971506096u+277703647)$
c_4, c_7	$(u^8+2u^7+u^6+2u^5+6u^4+4u^3-2u^2-2u+1)$ $\cdot(u^{36}+2u^{34}+\cdots+2u+1)(u^{66}-15u^{64}+\cdots-u-1)$ $\cdot(u^{120}+7u^{119}+\cdots-34u+7)$
c_5	$((u+1)^8)(u^{30}-3u^{29}+\cdots+6u-1)^4(u^{36}-8u^{35}+\cdots+2u+3)$ $\cdot(u^{66}+13u^{65}+\cdots-738u-52)$
c_6, c_9	$((u^4-u^2+1)^2)(u^{36}-4u^{35}+\cdots-7u+1)(u^{66}+2u^{65}+\cdots+5u+2)$ $\cdot(u^{120}+9u^{119}+\cdots+1147452u+251797)$
c_8	$((u^2+1)^4)(u^{30}-9u^{29}+\cdots-14u+1)^4(u^{36}+15u^{35}+\cdots+100u+7)$ $\cdot(u^{66}+26u^{65}+\cdots+29690u+1300)$
c_{11}	$((u^2+1)^4)(u^{30}-9u^{29}+\cdots-14u+1)^4(u^{36}-15u^{35}+\cdots-100u+7)$ $\cdot(u^{66}+26u^{65}+\cdots+29690u+1300)$
c_{12}	$((u^2-u+1)^{60})(u^2+u+1)^4(u^{36}-11u^{35}+\cdots-29u+7)$ $\cdot(u^{66}+56u^{65}+\cdots+17045651456u+536870912)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^8)(y^{30}+11y^{29}+\cdots-52y+1)^4$ $\cdot(y^{36}+4y^{35}+\cdots-15214y+81)$ $\cdot(y^{66}+17y^{65}+\cdots-505176688y+7311616)$
c_2, c_5	$((y-1)^8)(y^{30}-13y^{29}+\cdots-8y+1)^4(y^{36}-20y^{35}+\cdots-286y+9)$ $\cdot(y^{66}-31y^{65}+\cdots-17676y+2704)$
c_3, c_{10}	$(y^8+2y^7+5y^6+12y^5+26y^4+30y^3+32y^2+8y+1)$ $\cdot(y^{36}+12y^{35}+\cdots+444y+49)(y^{66}+26y^{65}+\cdots+13111y+32761)$ $\cdot(y^{120}+41y^{119}+\cdots+4660341483603865276y+77119315557100609)$
c_4, c_7	$(y^8-2y^7+5y^6-12y^5+26y^4-30y^3+32y^2-8y+1)$ $\cdot(y^{36}+4y^{35}+\cdots+18y+1)(y^{66}-30y^{65}+\cdots-51y+1)$ $\cdot(y^{120}+25y^{119}+\cdots+3884y+49)$
c_6, c_9	$((y^2-y+1)^4)(y^{36}+20y^{35}+\cdots+67y+1)(y^{66}-2y^{65}+\cdots+43y+4)$ $\cdot(y^{120}+51y^{119}+\cdots+3713334879894y+63401729209)$
c_8, c_{11}	$((y+1)^8)(y^{30}+19y^{29}+\cdots-76y+1)^4$ $\cdot(y^{36}+29y^{35}+\cdots+2040y+49)$ $\cdot(y^{66}+46y^{65}+\cdots+26109300y+1690000)$
c_{12}	$((y^2+y+1)^{64})(y^{36}+5y^{35}+\cdots+909y+49)$ $\cdot(y^{66}+6y^{65}+\cdots-1242993497154256896y+288230376151711744)$