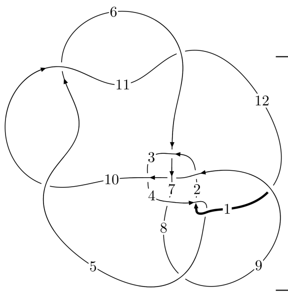
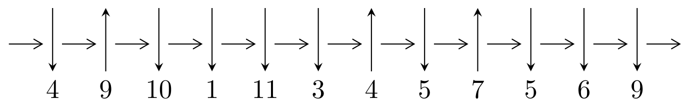
$12n_{0848}$ ($K12n_{0848}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 1490992711u^{33} + 21038016102u^{32} + \cdots + 1046658856b + 191326556928,$$
$$746029u^{33} - 897227141u^{32} + \cdots + 313997568a - 74904566272,\ u^{34} + 16u^{33} + \cdots + 512u + 256\rangle$$
$$I_2^u = \langle 9001u^{25} - 3749u^{24} + \cdots + 24457b + 25814,\ -17555u^{25} - 14121u^{24} + \cdots + 73371a + 84484,$$
$$u^{26} - 14u^{24} + \cdots + u + 3\rangle$$
$$I_3^u = \langle -6a^3bu - 4a^3b + 4a^2bu + 2a^2b - bau - a^2u + b^2 - ba - 2bu - a^2 + 2au + u - 1,$$
$$a^4 - a^3u + a^3 - a^2u + 2a^2 + 2au - 3a - 3u + 5,\ u^2 - u - 1\rangle$$
$$I_4^u = \langle -6a^3bu - 4a^3b + 8a^2bu + 4a^2b - 3bau - a^2u + b^2 - 3ba + 2bu - a^2 + 2au + u - 1,$$
$$a^4 - 2a^3u + 2a^3 - 2a^2u + 4a^2 - 2au + 3a - 3u + 5,\ u^2 - u - 1\rangle$$
$$I_5^u = \langle b - u,\ a,\ u^2 + u - 1\rangle$$

* 5 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 94 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. $\boldsymbol{I_1^u} =$
$\langle \mathbf{1.49 \times 10^9} \boldsymbol{u}^{\mathbf{33}} + \mathbf{2.10 \times 10^{10}} \boldsymbol{u}^{\mathbf{32}} + \cdots + \mathbf{1.05 \times 10^8} \boldsymbol{b} + \mathbf{1.91 \times 10^{11}},\ \mathbf{7.46 \times 10^5} \boldsymbol{u}^{\mathbf{33}} - \mathbf{8.97 \times 10^8} \boldsymbol{u}^{\mathbf{32}} + \cdots + \mathbf{3.14 \times 10^8} \boldsymbol{a} - \mathbf{7.49 \times 10^{10}},\ \boldsymbol{u}^{\mathbf{34}} + \mathbf{16} \boldsymbol{u}^{\mathbf{33}} + \cdots + \mathbf{512} \boldsymbol{u} + \mathbf{256} \rangle$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -0.00237591u^{33} + 2.85743u^{32} + \cdots + 210.618u + 238.551 \\ -14.2453u^{33} - 201.002u^{32} + \cdots - 2806.15u - 1827.97 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -9.99391u^{33} - 154.470u^{32} + \cdots - 2993.11u - 2567.55 \\ 46.6896u^{33} + 675.692u^{32} + \cdots + 10474.3u + 7478.64 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} 36.6957u^{33} + 521.222u^{32} + \cdots + 7481.16u + 4911.09 \\ 46.6896u^{33} + 675.692u^{32} + \cdots + 10474.3u + 7478.64 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 30.0648u^{33} + 443.715u^{32} + \cdots + 7461.44u + 6086.67 \\ 8.51516u^{33} + 125.472u^{32} + \cdots + 2106.90u + 1857.91 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 13.1190u^{33} + 186.388u^{32} + \cdots + 2673.13u + 1806.42 \\ -28.4932u^{33} - 403.883u^{32} + \cdots - 5742.22u - 3935.80 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -13.1190u^{33} - 186.388u^{32} + \cdots - 2673.13u - 1806.42 \\ -12.1032u^{33} - 178.316u^{32} + \cdots - 2939.47u - 2084.28 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.811803u^{33} + 19.0064u^{32} + \cdots + 712.808u + 606.416 \\ -28.5552u^{33} - 410.268u^{32} + \cdots - 6140.23u - 4213.59 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{470816681}{3270808}u^{33} + \frac{27543600709}{13083232}u^{32} + \cdots + \frac{13947213170}{408851}u + \frac{10499734540}{408851}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{34} - 9u^{33} + \cdots - 135u + 45$
c_2, c_7	$u^{34} + 15u^{32} + \cdots + 3u + 31$
c_3, c_6	$u^{34} + u^{33} + \cdots - 2u + 1$
c_5, c_{10}, c_{11}	$u^{34} - 16u^{33} + \cdots - 512u + 256$
c_8, c_{12}	$u^{34} + 2u^{33} + \cdots + 2u + 1$
c_9	$u^{34} + 14u^{33} + \cdots + 540u + 45$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{34} + 9y^{33} + \cdots + 7425y + 2025$
c_2, c_7	$y^{34} + 30y^{33} + \cdots + 16297y + 961$
c_3, c_6	$y^{34} - 25y^{33} + \cdots - 22y + 1$
c_5, c_{10}, c_{11}	$y^{34} - 28y^{33} + \cdots - 65536y + 65536$
c_8, c_{12}	$y^{34} - 48y^{33} + \cdots - 10y + 1$
c_9	$y^{34} - 6y^{33} + \cdots + 31050y + 2025$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.795593+0.740595I$ $a=-0.290888+0.609919I$ $b=\ 0.853986+1.101180I$	$3.51064+1.64445I$	$7.07709-8.00929I$
$u=-0.795593-0.740595I$ $a=-0.290888-0.609919I$ $b=\ 0.853986-1.101180I$	$3.51064-1.64445I$	$7.07709+8.00929I$
$u=\ 1.092680+0.387055I$ $a=-0.383036-0.709367I$ $b=\ 1.43819-0.26328I$	$-0.064466-0.761171I$	0
$u=\ 1.092680-0.387055I$ $a=-0.383036+0.709367I$ $b=\ 1.43819+0.26328I$	$-0.064466+0.761171I$	0
$u=\ 0.697499+0.930339I$ $a=\ 0.027330+1.123010I$ $b=-0.506447-0.080887I$	$-6.81076-4.03336I$	0
$u=\ 0.697499-0.930339I$ $a=\ 0.027330-1.123010I$ $b=-0.506447+0.080887I$	$-6.81076+4.03336I$	0
$u=-0.939424+0.738369I$ $a=\ 0.552486-0.224603I$ $b=-1.85831-0.64729I$	$3.08759+3.98437I$	0
$u=-0.939424-0.738369I$ $a=\ 0.552486+0.224603I$ $b=-1.85831+0.64729I$	$3.08759-3.98437I$	0
$u=\ 0.144340+0.791374I$ $a=\ 1.60313-0.01473I$ $b=-1.48435+0.51718I$	$2.79908-3.47479I$	$-8.15502+3.50613I$
$u=\ 0.144340-0.791374I$ $a=\ 1.60313+0.01473I$ $b=-1.48435-0.51718I$	$2.79908+3.47479I$	$-8.15502-3.50613I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.560287 + 1.062520I$ $a = -0.967599 + 0.348568I$ $b = 1.58175 - 0.28106I$	$-6.28578 - 2.44883I$	0
$u = 0.560287 - 1.062520I$ $a = -0.967599 - 0.348568I$ $b = 1.58175 + 0.28106I$	$-6.28578 + 2.44883I$	0
$u = 0.715757 + 1.021220I$ $a = -1.114730 + 0.080818I$ $b = 1.84474 - 0.41176I$	$-5.93132 - 10.98960I$	0
$u = 0.715757 - 1.021220I$ $a = -1.114730 - 0.080818I$ $b = 1.84474 + 0.41176I$	$-5.93132 + 10.98960I$	0
$u = 0.664796 + 1.099000I$ $a = 0.343002 + 0.963985I$ $b = -0.939763 + 0.206515I$	$-5.69125 + 4.02411I$	0
$u = 0.664796 - 1.099000I$ $a = 0.343002 - 0.963985I$ $b = -0.939763 - 0.206515I$	$-5.69125 - 4.02411I$	0
$u = -1.291770 + 0.282900I$ $a = -0.690521 + 0.673761I$ $b = 1.16812 + 1.17671I$	$-3.78332 + 5.21759I$	0
$u = -1.291770 - 0.282900I$ $a = -0.690521 - 0.673761I$ $b = 1.16812 - 1.17671I$	$-3.78332 - 5.21759I$	0
$u = -1.370090 + 0.033595I$ $a = -0.889375 + 0.029970I$ $b = 0.244301 + 0.277763I$	$-6.81111 + 0.91596I$	0
$u = -1.370090 - 0.033595I$ $a = -0.889375 - 0.029970I$ $b = 0.244301 - 0.277763I$	$-6.81111 - 0.91596I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.351170 + 0.333518I$ $a = -0.648443 + 0.927412I$ $b = 1.31097 + 1.11405I$	$-1.91040 + 7.52741I$	0
$u = -1.351170 - 0.333518I$ $a = -0.648443 - 0.927412I$ $b = 1.31097 - 1.11405I$	$-1.91040 - 7.52741I$	0
$u = 0.057196 + 0.549178I$ $a = 1.41929 - 0.58161I$ $b = -0.916802 + 0.411033I$	$0.35102 - 2.00388I$	$-3.74140 + 5.07186I$
$u = 0.057196 - 0.549178I$ $a = 1.41929 + 0.58161I$ $b = -0.916802 - 0.411033I$	$0.35102 + 2.00388I$	$-3.74140 - 5.07186I$
$u = 0.467415 + 0.199735I$ $a = 0.822304 - 0.650309I$ $b = 0.404343 + 0.377457I$	$-1.146940 - 0.238863I$	$-10.78369 + 2.61801I$
$u = 0.467415 - 0.199735I$ $a = 0.822304 + 0.650309I$ $b = 0.404343 - 0.377457I$	$-1.146940 + 0.238863I$	$-10.78369 - 2.61801I$
$u = -1.63628 + 0.32409I$ $a = 0.537236 + 0.644759I$ $b = -0.368302 - 0.377949I$	$-14.4434 + 8.7543I$	0
$u = -1.63628 - 0.32409I$ $a = 0.537236 - 0.644759I$ $b = -0.368302 + 0.377949I$	$-14.4434 - 8.7543I$	0
$u = -1.66486 + 0.33880I$ $a = 0.668565 - 0.515867I$ $b = -2.25117 - 1.06102I$	$-13.7374 + 16.0989I$	0
$u = -1.66486 - 0.33880I$ $a = 0.668565 + 0.515867I$ $b = -2.25117 + 1.06102I$	$-13.7374 - 16.0989I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -1.66017 + 0.38893I$ $a = \ \ 0.630339 - 0.408666I$ $b = -2.15582 - 1.03899I$	$-13.5280 + 7.9597I$	0
$u = -1.66017 - 0.38893I$ $a = \ \ 0.630339 + 0.408666I$ $b = -2.15582 + 1.03899I$	$-13.5280 - 7.9597I$	0
$u = -1.69061 + 0.34903I$ $a = \ \ 0.380909 + 0.625669I$ $b = -0.365451 + 0.042202I$	$-13.49590 + 1.47115I$	0
$u = -1.69061 - 0.34903I$ $a = \ \ 0.380909 - 0.625669I$ $b = -0.365451 - 0.042202I$	$-13.49590 - 1.47115I$	0

II. $I_2^u = \langle 9001u^{25} - 3749u^{24} + \cdots + 24457b + 25814,\ -17555u^{25} - 14121u^{24} + \cdots + 73371a + 84484,\ u^{26} - 14u^{24} + \cdots + u + 3\rangle$

(i) Arc colorings

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

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

$$a_{11} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.239263u^{25} + 0.192460u^{24} + \cdots + 0.129438u - 1.15146 \\ -0.368034u^{25} + 0.153289u^{24} + \cdots - 3.69919u - 1.05549 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.133486u^{25} + 0.561148u^{24} + \cdots - 2.94220u + 2.26110 \\ -0.941285u^{25} + 0.413051u^{24} + \cdots + 4.01889u - 0.499203 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -0.807799u^{25} + 0.974200u^{24} + \cdots + 1.07669u + 1.76190 \\ -0.941285u^{25} + 0.413051u^{24} + \cdots + 4.01889u - 0.499203 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -1.37857u^{25} + 1.35262u^{24} + \cdots + 4.31739u - 4.85565 \\ -0.395183u^{25} - 0.0794864u^{24} + \cdots + 0.306006u + 0.0778509 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} 0.386869u^{25} + 0.659811u^{24} + \cdots - 5.29940u - 0.572161 \\ -0.474670u^{25} - 1.13448u^{24} + \cdots - 0.220959u + 0.263401 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 0.386869u^{25} + 0.659811u^{24} + \cdots - 5.29940u - 0.572161 \\ -0.319091u^{25} - 0.428589u^{24} + \cdots - 2.04138u - 1.71603 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -0.217225u^{25} + 1.32330u^{24} + \cdots - 5.90926u + 3.22244 \\ -1.02441u^{25} + 1.62354u^{24} + \cdots - 1.93961u - 5.52018 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{49040}{24457}u^{25} + \frac{47416}{24457}u^{24} + \cdots + \frac{432909}{24457}u - \frac{279738}{24457}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{26} - 10u^{25} + \cdots - 7u + 1$
c_2, c_7	$u^{26} + u^{25} + \cdots + u + 1$
c_3, c_6	$u^{26} + 3u^{24} + \cdots + 2u + 1$
c_4	$u^{26} + 10u^{25} + \cdots + 7u + 1$
c_5	$u^{26} - 14u^{24} + \cdots - u + 3$
c_8, c_{12}	$u^{26} - u^{25} + \cdots - 2u + 1$
c_9	$u^{26} - 15u^{25} + \cdots - 3u^2 + 1$
c_{10}, c_{11}	$u^{26} - 14u^{24} + \cdots + u + 3$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{26} + 8y^{25} + \cdots + 25y + 1$
c_2, c_7	$y^{26} + 9y^{25} + \cdots + y + 1$
c_3, c_6	$y^{26} + 6y^{25} + \cdots - 2y + 1$
c_5, c_{10}, c_{11}	$y^{26} - 28y^{25} + \cdots - 139y + 9$
c_8, c_{12}	$y^{26} - y^{25} + \cdots + 10y + 1$
c_9	$y^{26} - 7y^{25} + \cdots - 6y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.893260 + 0.637608I$ $a = 0.560326 + 0.364777I$ $b = -2.06321 + 0.72664I$	$3.35683 - 4.09621I$	$9.04442 + 9.36453I$
$u = 0.893260 - 0.637608I$ $a = 0.560326 - 0.364777I$ $b = -2.06321 - 0.72664I$	$3.35683 + 4.09621I$	$9.04442 - 9.36453I$
$u = 0.880673 + 0.813599I$ $a = -0.199661 - 0.634313I$ $b = 0.933273 - 0.889664I$	$3.23266 - 1.47692I$	$-14.8020 - 4.6669I$
$u = 0.880673 - 0.813599I$ $a = -0.199661 + 0.634313I$ $b = 0.933273 + 0.889664I$	$3.23266 + 1.47692I$	$-14.8020 + 4.6669I$
$u = -1.185480 + 0.207955I$ $a = -0.955887 + 0.901453I$ $b = 0.811448 + 0.957313I$	$-4.63801 + 5.99993I$	$-14.9211 - 9.9188I$
$u = -1.185480 - 0.207955I$ $a = -0.955887 - 0.901453I$ $b = 0.811448 - 0.957313I$	$-4.63801 - 5.99993I$	$-14.9211 + 9.9188I$
$u = 1.202230 + 0.117764I$ $a = -0.637447 - 0.487886I$ $b = 2.06384 - 0.07791I$	$-0.49786 - 5.55128I$	$-9.12515 + 7.27164I$
$u = 1.202230 - 0.117764I$ $a = -0.637447 + 0.487886I$ $b = 2.06384 + 0.07791I$	$-0.49786 + 5.55128I$	$-9.12515 - 7.27164I$
$u = 1.243290 + 0.193806I$ $a = -0.489545 - 0.716730I$ $b = 1.52007 + 0.02768I$	$0.692396 + 0.908891I$	$-7.23329 - 0.60855I$
$u = 1.243290 - 0.193806I$ $a = -0.489545 + 0.716730I$ $b = 1.52007 - 0.02768I$	$0.692396 - 0.908891I$	$-7.23329 + 0.60855I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.658052+0.322237I$ $a=-0.42930-1.84882I$ $b=\ \ 0.1212750-0.0229366I$	$-2.72945-3.92062I$	$-4.89712+0.84761I$
$u=-0.658052-0.322237I$ $a=-0.42930+1.84882I$ $b=\ \ 0.1212750+0.0229366I$	$-2.72945+3.92062I$	$-4.89712-0.84761I$
$u=\ \ 0.253711+0.648614I$ $a=\ \ 1.54093+0.37558I$ $b=-1.54024+0.65815I$	$3.74733-3.59988I$	$2.14910+5.61503I$
$u=\ \ 0.253711-0.648614I$ $a=\ \ 1.54093-0.37558I$ $b=-1.54024-0.65815I$	$3.74733+3.59988I$	$2.14910-5.61503I$
$u=-1.323060+0.064355I$ $a=-0.913064-0.390548I$ $b=\ \ 0.186999-0.379225I$	$-6.94880-1.74984I$	$-16.2080+5.2909I$
$u=-1.323060-0.064355I$ $a=-0.913064+0.390548I$ $b=\ \ 0.186999+0.379225I$	$-6.94880+1.74984I$	$-16.2080-5.2909I$
$u=\ \ 0.523416+0.235808I$ $a=-0.028987+1.090670I$ $b=-1.72849+0.71878I$	$1.85328+4.23193I$	$1.90603-3.22437I$
$u=\ \ 0.523416-0.235808I$ $a=-0.028987-1.090670I$ $b=-1.72849-0.71878I$	$1.85328-4.23193I$	$1.90603+3.22437I$
$u=-1.39226+0.31614I$ $a=-0.575637+0.854749I$ $b=\ \ 1.37916+1.22716I$	$-1.47076+7.28765I$	$-1.27616-2.61256I$
$u=-1.39226-0.31614I$ $a=-0.575637-0.854749I$ $b=\ \ 1.37916-1.22716I$	$-1.47076-7.28765I$	$-1.27616+2.61256I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.424309 + 0.245639I$ $a = -2.57995 + 0.40653I$ $b = \ \ 0.973329 - 0.091897I$	$-3.57929 + 2.94101I$	$-6.02456 - 4.67234I$
$u = -0.424309 - 0.245639I$ $a = -2.57995 - 0.40653I$ $b = \ \ 0.973329 + 0.091897I$	$-3.57929 - 2.94101I$	$-6.02456 + 4.67234I$
$u = \ \ 1.62079 + 0.00745I$ $a = \ \ 0.614461 + 0.601198I$ $b = -1.63692 + 0.02907I$	$-11.33640 - 3.61266I$	$-11.52145 + 2.34970I$
$u = \ \ 1.62079 - 0.00745I$ $a = \ \ 0.614461 - 0.601198I$ $b = -1.63692 - 0.02907I$	$-11.33640 + 3.61266I$	$-11.52145 - 2.34970I$
$u = -1.63421 + 0.00977I$ $a = -0.072905 - 0.173246I$ $b = \ \ 1.47945 - 0.36272I$	$-6.35593 + 3.58442I$	$-8.09065 - 3.04488I$
$u = -1.63421 - 0.00977I$ $a = -0.072905 + 0.173246I$ $b = \ \ 1.47945 + 0.36272I$	$-6.35593 - 3.58442I$	$-8.09065 + 3.04488I$

III.

$\boldsymbol{I_3^u = \langle -6a^3bu + 4a^2bu + \cdots - a^2 - 1,\ -a^3u - a^2u + \cdots - 3a + 5,\ u^2 - u - 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -8a^3u - 4a^3 + 12a^2u + 12a^2 - 8au - 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$(u^4 + u^3 + u^2 - u + 1)^4$
c_2, c_7	$u^{16} + 2u^{15} + \cdots + 138u + 379$
c_3, c_6	$u^{16} + u^{15} + \cdots + 56u + 59$
c_5, c_{10}, c_{11}	$(u^2 + u - 1)^8$
c_8, c_{12}	$u^{16} - u^{15} + \cdots + 284u + 59$
c_9	$(u^4 - u^3 + u^2 + u + 1)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_9	$(y^4 + y^3 + 5y^2 + y + 1)^4$
c_2, c_7	$y^{16} + 16y^{15} + \cdots + 431966y + 143641$
c_3, c_6	$y^{16} + 7y^{15} + \cdots - 9862y + 3481$
c_5, c_{10}, c_{11}	$(y^2 - 3y + 1)^8$
c_8, c_{12}	$y^{16} - y^{15} + \cdots - 39710y + 3481$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.618034$ $a = \ \ 0.701224 + 0.850806I$ $b = \ \ 0.921506 + 0.765153I$	$1.25412 - 4.68603I$	$-8.70941 + 10.27938I$
$u = -0.618034$ $a = \ \ 0.701224 + 0.850806I$ $b = -2.34307 + 0.30970I$	$1.25412 - 4.68603I$	$-8.70941 + 10.27938I$
$u = -0.618034$ $a = \ \ 0.701224 - 0.850806I$ $b = \ \ 0.921506 - 0.765153I$	$1.25412 + 4.68603I$	$-8.70941 - 10.27938I$
$u = -0.618034$ $a = \ \ 0.701224 - 0.850806I$ $b = -2.34307 - 0.30970I$	$1.25412 + 4.68603I$	$-8.70941 - 10.27938I$
$u = -0.618034$ $a = -1.51024 + 1.83240I$ $b = \ \ 0.658617 + 0.576443I$	$-3.22804 + 4.68603I$	$-11.2906 - 10.2794I$
$u = -0.618034$ $a = -1.51024 + 1.83240I$ $b = \ \ 0.453931 - 0.626400I$	$-3.22804 + 4.68603I$	$-11.2906 - 10.2794I$
$u = -0.618034$ $a = -1.51024 - 1.83240I$ $b = \ \ 0.658617 - 0.576443I$	$-3.22804 - 4.68603I$	$-11.2906 + 10.2794I$
$u = -0.618034$ $a = -1.51024 - 1.83240I$ $b = \ \ 0.453931 + 0.626400I$	$-3.22804 - 4.68603I$	$-11.2906 + 10.2794I$
$u = \ \ 1.61803$ $a = \ \ 0.576861 + 0.699914I$ $b = -1.43394 + 0.81776I$	$-11.12370 - 4.68603I$	$-11.2906 + 10.2794I$
$u = \ \ 1.61803$ $a = \ \ 0.576861 + 0.699914I$ $b = -1.47875 - 0.94855I$	$-11.12370 - 4.68603I$	$-11.2906 + 10.2794I$

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.61803$ $a = 0.576861 - 0.699914I$ $b = -1.43394 - 0.81776I$	$-11.12370 + 4.68603I$	$-11.2906 - 10.2794I$
$u = 1.61803$ $a = 0.576861 - 0.699914I$ $b = -1.47875 + 0.94855I$	$-11.12370 + 4.68603I$	$-11.2906 - 10.2794I$
$u = 1.61803$ $a = -0.267844 + 0.324979I$ $b = 0.169969 + 0.304317I$	$-6.64156 + 4.68603I$	$-8.70941 - 10.27938I$
$u = 1.61803$ $a = -0.267844 + 0.324979I$ $b = 3.55174 + 2.50968I$	$-6.64156 + 4.68603I$	$-8.70941 - 10.27938I$
$u = 1.61803$ $a = -0.267844 - 0.324979I$ $b = 0.169969 - 0.304317I$	$-6.64156 - 4.68603I$	$-8.70941 + 10.27938I$
$u = 1.61803$ $a = -0.267844 - 0.324979I$ $b = 3.55174 - 2.50968I$	$-6.64156 - 4.68603I$	$-8.70941 + 10.27938I$

IV.

$\boldsymbol{I_4^u = \langle -6a^3bu + 8a^2bu + \cdots - a^2 - 1,\ -2a^3u - 2a^2u + \cdots + 3a + 5,\ u^2 - u - 1\rangle}$

(i) Arc colorings

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

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

$$a_{11} = \begin{pmatrix} 1 \\ u+1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} a \\ b \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} a^2u \\ bau+u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} bau + a^2u + u \\ bau+u \end{pmatrix}$$

$$a_7 = \begin{pmatrix} a^3bu + a^3b + 4a^3u + 2a^3 - a^2u - a^2 + 2au - 1 \\ au - 1 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -a^3bu - a^3b + 2a^2bu - 2a^3u - a^3 + a^2u - ba + bu + a^2 + au - b \\ 3a^3bu - 4a^2bu + \cdots - a - 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} a^3bu + a^3b - 2a^2bu + 2a^3u + a^3 - a^2u + ba - bu - a^2 - au + b \\ a^2u + a^2 - 2au + 1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} a^3u + a^3 + a \\ a^2bu + a^2b + au + b + a \end{pmatrix}$$

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 16a^3u + 8a^3 - 12a^2u - 12a^2 + 4au - 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$(u^4 + 2u^3 + 2u^2 + u + 1)^4$
c_2, c_7	$u^{16} - u^{15} + \cdots + 140u + 31$
c_3, c_6	$u^{16} - 2u^{14} + \cdots - 50u + 19$
c_5, c_{10}, c_{11}	$(u^2 + u - 1)^8$
c_8, c_{12}	$u^{16} - 10u^{14} + \cdots - 348u + 181$
c_9	$(u^4 - 2u^3 + 2u^2 - u + 1)^4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_9	$(y^4 + 2y^2 + 3y + 1)^4$
c_2, c_7	$y^{16} + 7y^{15} + \cdots - 4534y + 961$
c_3, c_6	$y^{16} - 4y^{15} + \cdots - 2006y + 361$
c_5, c_{10}, c_{11}	$(y^2 - 3y + 1)^8$
c_8, c_{12}	$y^{16} - 20y^{15} + \cdots - 157666y + 32761$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.618034$ $a = \ \ 0.114389 + 1.227680I$ $b = -1.240620 - 0.088689I$	$2.40496 + 2.59539I$	$-2.46048 - 0.91892I$
$u = -0.618034$ $a = \ \ 0.114389 + 1.227680I$ $b = \ \ 1.04645 + 1.23483I$	$2.40496 + 2.59539I$	$-2.46048 - 0.91892I$
$u = -0.618034$ $a = \ \ 0.114389 - 1.227680I$ $b = -1.240620 + 0.088689I$	$2.40496 - 2.59539I$	$-2.46048 + 0.91892I$
$u = -0.618034$ $a = \ \ 0.114389 - 1.227680I$ $b = \ \ 1.04645 - 1.23483I$	$2.40496 - 2.59539I$	$-2.46048 + 0.91892I$
$u = -0.618034$ $a = -1.73242 + 1.22768I$ $b = \ \ 1.46250 + 0.00227I$	$-4.37888 + 2.59539I$	$-17.5395 - 0.9189I$
$u = -0.618034$ $a = -1.73242 + 1.22768I$ $b = -0.0322538 + 0.0734044I$	$-4.37888 + 2.59539I$	$-17.5395 - 0.9189I$
$u = -0.618034$ $a = -1.73242 - 1.22768I$ $b = \ \ 1.46250 - 0.00227I$	$-4.37888 - 2.59539I$	$-17.5395 + 0.9189I$
$u = -0.618034$ $a = -1.73242 - 1.22768I$ $b = -0.0322538 - 0.0734044I$	$-4.37888 - 2.59539I$	$-17.5395 + 0.9189I$
$u = \ \ 1.61803$ $a = \ \ 0.661727 + 0.468930I$ $b = -0.723384 - 0.015686I$	$-12.27460 - 2.59539I$	$-17.5395 + 0.9189I$
$u = \ \ 1.61803$ $a = \ \ 0.661727 + 0.468930I$ $b = -3.02105 + 0.21381I$	$-12.27460 - 2.59539I$	$-17.5395 + 0.9189I$

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.61803$ $a = 0.661727 - 0.468930I$ $b = -0.723384 + 0.015686I$	$-12.27460 + 2.59539I$	$-17.5395 - 0.9189I$
$u = 1.61803$ $a = 0.661727 - 0.468930I$ $b = -3.02105 - 0.21381I$	$-12.27460 + 2.59539I$	$-17.5395 - 0.9189I$
$u = 1.61803$ $a = -0.043693 + 0.468930I$ $b = 0.491811 - 0.313559I$	$-5.49072 - 2.59539I$	$-2.46048 + 0.91892I$
$u = 1.61803$ $a = -0.043693 + 0.468930I$ $b = 0.01655 + 3.31420I$	$-5.49072 - 2.59539I$	$-2.46048 + 0.91892I$
$u = 1.61803$ $a = -0.043693 - 0.468930I$ $b = 0.491811 + 0.313559I$	$-5.49072 + 2.59539I$	$-2.46048 - 0.91892I$
$u = 1.61803$ $a = -0.043693 - 0.468930I$ $b = 0.01655 - 3.31420I$	$-5.49072 + 2.59539I$	$-2.46048 - 0.91892I$

V. $I_5^u = \langle b - u,\ a,\ u^2 + u - 1\rangle$

(i) Arc colorings

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

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

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

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

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

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

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

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

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

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

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

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -10$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4, c_9	y^2
c_2, c_3, c_5 c_6, c_7, c_8 c_{10}, c_{11}, c_{12}	$y^2 - 3y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.618034$ $a = 0$ $b = 0.618034$	-0.986960	-10.0000
$u = -1.61803$ $a = 0$ $b = -1.61803$	-8.88264	-10.0000

VI. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$u^2(u^4+u^3+u^2-u+1)^4(u^4+2u^3+2u^2+u+1)^4$ $\cdot(u^{26}-10u^{25}+\cdots-7u+1)(u^{34}-9u^{33}+\cdots-135u+45)$
c_2, c_7	$(u^2-u-1)(u^{16}-u^{15}+\cdots+140u+31)(u^{16}+2u^{15}+\cdots+138u+379)$ $\cdot(u^{26}+u^{25}+\cdots+u+1)(u^{34}+15u^{32}+\cdots+3u+31)$
c_3, c_6	$(u^2-u-1)(u^{16}-2u^{14}+\cdots-50u+19)(u^{16}+u^{15}+\cdots+56u+59)$ $\cdot(u^{26}+3u^{24}+\cdots+2u+1)(u^{34}+u^{33}+\cdots-2u+1)$
c_4	$u^2(u^4+u^3+u^2-u+1)^4(u^4+2u^3+2u^2+u+1)^4$ $\cdot(u^{26}+10u^{25}+\cdots+7u+1)(u^{34}-9u^{33}+\cdots-135u+45)$
c_5	$(u^2-u-1)(u^2+u-1)^{16}(u^{26}-14u^{24}+\cdots-u+3)$ $\cdot(u^{34}-16u^{33}+\cdots-512u+256)$
c_8, c_{12}	$(u^2-u-1)(u^{16}-10u^{14}+\cdots-348u+181)$ $\cdot(u^{16}-u^{15}+\cdots+284u+59)(u^{26}-u^{25}+\cdots-2u+1)$ $\cdot(u^{34}+2u^{33}+\cdots+2u+1)$
c_9	$u^2(u^4-2u^3+2u^2-u+1)^4(u^4-u^3+u^2+u+1)^4$ $\cdot(u^{26}-15u^{25}+\cdots-3u^2+1)(u^{34}+14u^{33}+\cdots+540u+45)$
c_{10}, c_{11}	$(u^2-u-1)(u^2+u-1)^{16}(u^{26}-14u^{24}+\cdots+u+3)$ $\cdot(u^{34}-16u^{33}+\cdots-512u+256)$

VII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^2(y^4+2y^2+3y+1)^4(y^4+y^3+5y^2+y+1)^4$ $\cdot(y^{26}+8y^{25}+\cdots+25y+1)(y^{34}+9y^{33}+\cdots+7425y+2025)$
c_2, c_7	$(y^2-3y+1)(y^{16}+7y^{15}+\cdots-4534y+961)$ $\cdot(y^{16}+16y^{15}+\cdots+431966y+143641)(y^{26}+9y^{25}+\cdots+y+1)$ $\cdot(y^{34}+30y^{33}+\cdots+16297y+961)$
c_3, c_6	$(y^2-3y+1)(y^{16}-4y^{15}+\cdots-2006y+361)$ $\cdot(y^{16}+7y^{15}+\cdots-9862y+3481)(y^{26}+6y^{25}+\cdots-2y+1)$ $\cdot(y^{34}-25y^{33}+\cdots-22y+1)$
c_5, c_{10}, c_{11}	$((y^2-3y+1)^{17})(y^{26}-28y^{25}+\cdots-139y+9)$ $\cdot(y^{34}-28y^{33}+\cdots-65536y+65536)$
c_8, c_{12}	$(y^2-3y+1)(y^{16}-20y^{15}+\cdots-157666y+32761)$ $\cdot(y^{16}-y^{15}+\cdots-39710y+3481)(y^{26}-y^{25}+\cdots+10y+1)$ $\cdot(y^{34}-48y^{33}+\cdots-10y+1)$
c_9	$y^2(y^4+2y^2+3y+1)^4(y^4+y^3+5y^2+y+1)^4$ $\cdot(y^{26}-7y^{25}+\cdots-6y+1)(y^{34}-6y^{33}+\cdots+31050y+2025)$