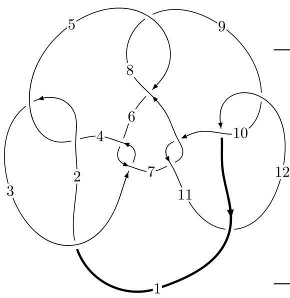
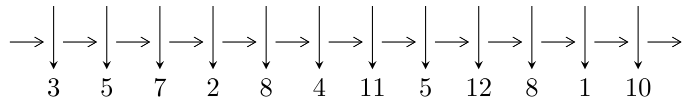
$12n_{0088}$ ($K12n_{0088}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle 1052u^{13} + 1602u^{12} + \cdots + 303b + 1332,\ a - 1,\\
&\quad u^{14} + u^{13} + 2u^{12} + u^{11} + 6u^{10} + 4u^9 + 4u^8 + u^7 + 6u^6 + 4u^5 - 2u^3 - 4u^2 + 4u - 1\rangle\\
I_2^u &= \langle -9.89889 \times 10^{121}u^{57} - 3.65306 \times 10^{122}u^{56} + \cdots + 1.87725 \times 10^{122}b + 2.30550 \times 10^{123},\\
&\quad -1.95314 \times 10^{123}u^{57} - 7.22784 \times 10^{123}u^{56} + \cdots + 3.00360 \times 10^{123}a + 3.04298 \times 10^{124},\\
&\quad u^{58} + 4u^{57} + \cdots - 32u - 4\rangle\\
I_3^u &= \langle u^2 + b + 2,\ a + 1,\ u^3 - u^2 + 2u - 1\rangle\\
I_4^u &= \langle -2au + b + 2u - 1,\ u^2a + a^2 - au + 3u^2 + a - u + 5,\ u^3 - u^2 + 2u - 1\rangle\\
I_5^u &= \langle b + 2u + 3,\ a,\ u^2 + u - 1\rangle
\end{aligned}$$

$$I_1^v = \langle a,\ 3b + 2v + 13,\ v^2 + 7v + 1\rangle$$

* 6 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 85 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.

$\boldsymbol{I_1^u = \langle 1052u^{13} + 1602u^{12} + \cdots + 303b + 1332,\ a - 1,\ u^{14} + u^{13} + \cdots + 4u - 1 \rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ -3.47195u^{13} - 5.28713u^{12} + \cdots + 16.2145u - 4.39604 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -u \\ 1.81518u^{13} + 2.61716u^{12} + \cdots - 8.49175u + 3.47195 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0.264026u^{13} + 0.356436u^{12} + \cdots - 0.392739u + 0.801980 \\ -0.276128u^{13} - 0.611661u^{12} + \cdots + 1.62046u + 0.179318 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.264026u^{13} + 0.356436u^{12} + \cdots - 0.392739u + 0.801980 \\ 0.375138u^{13} + 0.578658u^{12} + \cdots - 1.72607u - 0.0869087 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.639164u^{13} + 0.935094u^{12} + \cdots - 2.11881u + 0.715072 \\ 0.375138u^{13} + 0.578658u^{12} + \cdots - 1.72607u - 0.0869087 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.106711u^{13} + 0.0385039u^{12} + \cdots + 0.567657u + 0.558856 \\ -3.35314u^{13} - 4.99340u^{12} + \cdots + 15.5545u - 4.81848 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^2 + 1 \\ -4.27393u^{13} - 6.35314u^{12} + \cdots + 20.0033u - 6.21122 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 0.573157u^{13} + 0.512651u^{12} + \cdots - 0.937294u + 1.09791 \\ -1.34103u^{13} - 2.07151u^{12} + \cdots + 6.66007u - 2.46645 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{1196}{303}u^{13} + \frac{1124}{101}u^{12} + \cdots - \frac{3188}{303}u - \frac{3026}{101}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$u^{14} + 9u^{13} + \cdots + 16u + 1$
c_2, c_4, c_9 c_{12}	$u^{14} - 3u^{13} + \cdots - 2u - 1$
c_3, c_6, c_7 c_{10}	$u^{14} - u^{13} + \cdots - 4u - 1$
c_5, c_8	$u^{14} - 7u^{13} + \cdots - 24u + 8$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$y^{14} - 5y^{13} + \cdots - 208y + 1$
c_2, c_4, c_9 c_{12}	$y^{14} - 9y^{13} + \cdots - 16y + 1$
c_3, c_6, c_7 c_{10}	$y^{14} + 3y^{13} + \cdots - 8y + 1$
c_5, c_8	$y^{14} - 7y^{13} + \cdots + 384y + 64$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.985278$ $a = 1.00000$ $b = 0.711293$	-10.4546	-24.6220
$u = -0.336026 + 0.979953I$ $a = 1.00000$ $b = 0.255618 - 1.069010I$	$3.75566 - 0.17244I$	$-4.31674 + 1.33622I$
$u = -0.336026 - 0.979953I$ $a = 1.00000$ $b = 0.255618 + 1.069010I$	$3.75566 + 0.17244I$	$-4.31674 - 1.33622I$
$u = 0.811264 + 0.869909I$ $a = 1.00000$ $b = 0.73524 + 1.21182I$	$-1.53918 - 8.57795I$	$-13.9694 + 8.6920I$
$u = 0.811264 - 0.869909I$ $a = 1.00000$ $b = 0.73524 - 1.21182I$	$-1.53918 + 8.57795I$	$-13.9694 - 8.6920I$
$u = -0.920950 + 0.794472I$ $a = 1.00000$ $b = 2.22969 - 0.56400I$	$-7.24910 - 2.92807I$	$-16.0849 + 1.6852I$
$u = -0.920950 - 0.794472I$ $a = 1.00000$ $b = 2.22969 + 0.56400I$	$-7.24910 + 2.92807I$	$-16.0849 - 1.6852I$
$u = 0.685146 + 1.154840I$ $a = 1.00000$ $b = 1.095700 + 0.836675I$	$1.33116 - 5.50874I$	$-7.69545 + 3.70076I$
$u = 0.685146 - 1.154840I$ $a = 1.00000$ $b = 1.095700 - 0.836675I$	$1.33116 + 5.50874I$	$-7.69545 - 3.70076I$
$u = 0.495258$ $a = 1.00000$ $b = -0.192497$	-0.942520	-9.45120

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.90906 + 1.21001I$ $a = 1.00000$ $b = 1.54300 - 1.48268I$	$-4.9818 + 17.0516I$	$-13.2441 - 9.4300I$
$u = -0.90906 - 1.21001I$ $a = 1.00000$ $b = 1.54300 + 1.48268I$	$-4.9818 - 17.0516I$	$-13.2441 + 9.4300I$
$u = 0.414634 + 0.221302I$ $a = 1.00000$ $b = 3.88135 + 1.29131I$	$-2.88995 + 0.46660I$	$-33.6526 + 15.6404I$
$u = 0.414634 - 0.221302I$ $a = 1.00000$ $b = 3.88135 - 1.29131I$	$-2.88995 - 0.46660I$	$-33.6526 - 15.6404I$

II. $\boldsymbol{I_2^u = \langle -9.90 \times 10^{121}u^{57} - 3.65 \times 10^{122}u^{56} + \cdots + 1.88 \times 10^{122}b + 2.31 \times 10^{123},\ -1.95 \times 10^{123}u^{57} - 7.23 \times 10^{123}u^{56} + \cdots + 3.00 \times 10^{123}a + 3.04 \times 10^{124},\ u^{58} + 4u^{57} + \cdots - 32u - 4\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0.650266u^{57} + 2.40639u^{56} + \cdots - 29.2651u - 10.1311 \\ 0.527307u^{57} + 1.94596u^{56} + \cdots - 22.7262u - 12.2812 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0.436407u^{57} + 1.53830u^{56} + \cdots - 28.9670u - 2.62090 \\ -0.0748277u^{57} - 0.332438u^{56} + \cdots - 0.473003u + 4.86221 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -1.28188u^{57} - 4.65236u^{56} + \cdots + 75.0228u + 14.7864 \\ -0.168206u^{57} - 0.619830u^{56} + \cdots + 8.16456u + 2.60510 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} -1.28188u^{57} - 4.65236u^{56} + \cdots + 75.0228u + 14.7864 \\ -0.0117219u^{57} - 0.0393795u^{56} + \cdots + 1.91334u - 0.704417 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} -1.29360u^{57} - 4.69174u^{56} + \cdots + 76.9361u + 14.0819 \\ -0.0117219u^{57} - 0.0393795u^{56} + \cdots + 1.91334u - 0.704417 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} -2.62838u^{57} - 9.50925u^{56} + \cdots + 161.265u + 25.9962 \\ 0.376226u^{57} + 1.39349u^{56} + \cdots - 13.2103u - 10.9310 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1.25102u^{57} + 4.66027u^{56} + \cdots - 63.7398u - 18.6633 \\ 0.372290u^{57} + 1.46092u^{56} + \cdots - 14.4154u - 13.9819 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -3.61469u^{57} - 13.0974u^{56} + \cdots + 213.519u + 37.6085 \\ -0.129312u^{57} - 0.407792u^{56} + \cdots + 12.1768u - 2.92917 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 8.07218u^{57} + 30.8062u^{56} + \cdots - 296.329u - 286.736$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$u^{58} + 32u^{57} + \cdots + 25u + 1$
c_2, c_4, c_9 c_{12}	$u^{58} - 4u^{57} + \cdots + 5u + 1$
c_3, c_6, c_7 c_{10}	$u^{58} - 4u^{57} + \cdots + 32u - 4$
c_5, c_8	$(u^{29} + 2u^{28} + \cdots - 28u - 8)^2$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$y^{58} - 8y^{57} + \cdots + 195y + 1$
c_2, c_4, c_9 c_{12}	$y^{58} - 32y^{57} + \cdots - 25y + 1$
c_3, c_6, c_7 c_{10}	$y^{58} + 18y^{57} + \cdots - 984y + 16$
c_5, c_8	$(y^{29} - 28y^{28} + \cdots + 2896y - 64)^2$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.721948+0.675707I$ $a=-1.050020+0.447654I$ $b=-0.511195+1.317100I$	$2.03816+4.43643I$	$-7.12586-5.70665I$
$u=-0.721948-0.675707I$ $a=-1.050020-0.447654I$ $b=-0.511195-1.317100I$	$2.03816-4.43643I$	$-7.12586+5.70665I$
$u=-0.244212+0.907147I$ $a=-1.73124+0.12831I$ $b=-0.254583+0.569117I$	$4.34822+5.30129I$	$-10.14110-5.91971I$
$u=-0.244212-0.907147I$ $a=-1.73124-0.12831I$ $b=-0.254583-0.569117I$	$4.34822-5.30129I$	$-10.14110+5.91971I$
$u=\ \ 0.578373+0.893018I$ $a=-0.516169-0.639005I$ $b=\ \ 0.175167-1.077130I$	$-1.15248+2.97907I$	$-12.00000+0.I$
$u=\ \ 0.578373-0.893018I$ $a=-0.516169+0.639005I$ $b=\ \ 0.175167+1.077130I$	$-1.15248-2.97907I$	$-12.00000+0.I$
$u=-0.676773+0.824397I$ $a=-0.377087-1.293150I$ $b=-0.982001+0.458444I$	$-4.05295+3.42058I$	$-12.00000+0.I$
$u=-0.676773-0.824397I$ $a=-0.377087+1.293150I$ $b=-0.982001-0.458444I$	$-4.05295-3.42058I$	$-12.00000+0.I$
$u=\ \ 0.978563+0.440662I$ $a=\ \ 0.331345+0.627843I$ $b=-0.228672+1.138160I$	$-0.488787-0.370462I$	$-12.00000+0.I$
$u=\ \ 0.978563-0.440662I$ $a=\ \ 0.331345-0.627843I$ $b=-0.228672-1.138160I$	$-0.488787+0.370462I$	$-12.00000+0.I$

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.012023 + 0.920805I$ $a = 1.65342 - 0.02280I$ $b = 0.209786 - 0.307915I$	$4.90257 - 1.34329I$	$-7.80264 + 1.36225I$
$u = -0.012023 - 0.920805I$ $a = 1.65342 + 0.02280I$ $b = 0.209786 + 0.307915I$	$4.90257 + 1.34329I$	$-7.80264 - 1.36225I$
$u = -0.580576 + 0.921658I$ $a = -1.003690 - 0.228249I$ $b = -1.66287 + 0.18113I$	$-3.74876 + 1.54341I$	0
$u = -0.580576 - 0.921658I$ $a = -1.003690 + 0.228249I$ $b = -1.66287 - 0.18113I$	$-3.74876 - 1.54341I$	0
$u = 0.793089 + 0.792547I$ $a = -0.947329 - 0.215431I$ $b = -1.66287 - 0.18113I$	$-3.74876 - 1.54341I$	0
$u = 0.793089 - 0.792547I$ $a = -0.947329 + 0.215431I$ $b = -1.66287 + 0.18113I$	$-3.74876 + 1.54341I$	0
$u = 0.272105 + 0.830532I$ $a = -0.764969 - 0.947014I$ $b = 0.175167 + 1.077130I$	$-1.15248 - 2.97907I$	$-9.53425 + 4.84429I$
$u = 0.272105 - 0.830532I$ $a = -0.764969 + 0.947014I$ $b = 0.175167 - 1.077130I$	$-1.15248 + 2.97907I$	$-9.53425 - 4.84429I$
$u = 0.455577 + 1.032690I$ $a = -0.805887 + 0.343573I$ $b = -0.511195 - 1.317100I$	$2.03816 - 4.43643I$	0
$u = 0.455577 - 1.032690I$ $a = -0.805887 - 0.343573I$ $b = -0.511195 + 1.317100I$	$2.03816 + 4.43643I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.802696 + 0.874767I$ $a = -0.085771 + 0.996315I$ $b = 0.307471$	-7.39364	0
$u = -0.802696 - 0.874767I$ $a = -0.085771 - 0.996315I$ $b = 0.307471$	-7.39364	0
$u = -1.031050 + 0.638573I$ $a = -0.116942 - 1.016090I$ $b = -0.777038 - 0.585721I$	$-3.19564 - 4.35308I$	0
$u = -1.031050 - 0.638573I$ $a = -0.116942 + 1.016090I$ $b = -0.777038 + 0.585721I$	$-3.19564 + 4.35308I$	0
$u = -0.797235 + 0.914221I$ $a = 1.140830 - 0.268629I$ $b = 1.25483 - 0.74117I$	$-7.27243 + 6.00653I$	0
$u = -0.797235 - 0.914221I$ $a = 1.140830 + 0.268629I$ $b = 1.25483 + 0.74117I$	$-7.27243 - 6.00653I$	0
$u = 0.047575 + 0.760395I$ $a = 0.657460 - 1.245780I$ $b = -0.228672 + 1.138160I$	$-0.488787 - 0.370462I$	$-8.36692 + 2.50640I$
$u = 0.047575 - 0.760395I$ $a = 0.657460 + 1.245780I$ $b = -0.228672 - 1.138160I$	$-0.488787 + 0.370462I$	$-8.36692 - 2.50640I$
$u = 0.769423 + 0.972965I$ $a = -0.111786 + 0.971295I$ $b = -0.777038 - 0.585721I$	$-3.19564 - 4.35308I$	0
$u = 0.769423 - 0.972965I$ $a = -0.111786 - 0.971295I$ $b = -0.777038 + 0.585721I$	$-3.19564 + 4.35308I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.824653 + 1.012890I$ $a = 0.164016 + 1.106820I$ $b = 1.240200 - 0.434590I$	$-6.56035 + 9.36152I$	0
$u = -0.824653 - 1.012890I$ $a = 0.164016 - 1.106820I$ $b = 1.240200 + 0.434590I$	$-6.56035 - 9.36152I$	0
$u = 0.202324 + 1.331240I$ $a = -0.027585 + 0.375583I$ $b = -0.20707 - 3.33341I$	$1.81502 - 2.87998I$	0
$u = 0.202324 - 1.331240I$ $a = -0.027585 - 0.375583I$ $b = -0.20707 + 3.33341I$	$1.81502 + 2.87998I$	0
$u = -0.803948 + 1.131230I$ $a = -1.108550 + 0.044327I$ $b = -1.28128 + 1.27353I$	$-1.66044 + 11.01250I$	0
$u = -0.803948 - 1.131230I$ $a = -1.108550 - 0.044327I$ $b = -1.28128 - 1.27353I$	$-1.66044 - 11.01250I$	0
$u = 0.601388$ $a = -0.244736$ $b = -7.40752$	-2.67255	-211.680
$u = 0.557093 + 0.195871I$ $a = 0.779962 - 0.625827I$ $b = -0.0910519$	-0.942618	$-9.31087 + 0.I$
$u = 0.557093 - 0.195871I$ $a = 0.779962 + 0.625827I$ $b = -0.0910519$	-0.942618	$-9.31087 + 0.I$
$u = -0.66392 + 1.25713I$ $a = 0.830507 + 0.195558I$ $b = 1.25483 - 0.74117I$	$-7.27243 + 6.00653I$	0

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.66392 - 1.25713I$ $a = 0.830507 - 0.195558I$ $b = 1.25483 + 0.74117I$	$-7.27243 - 6.00653I$	0
$u = 1.32127 + 0.56430I$ $a = -0.207826 + 0.712702I$ $b = -0.982001 + 0.458444I$	$-4.05295 + 3.42058I$	0
$u = 1.32127 - 0.56430I$ $a = -0.207826 - 0.712702I$ $b = -0.982001 - 0.458444I$	$-4.05295 - 3.42058I$	0
$u = -1.25634 + 0.74661I$ $a = 0.131009 + 0.884078I$ $b = 1.240200 + 0.434590I$	$-6.56035 - 9.36152I$	0
$u = -1.25634 - 0.74661I$ $a = 0.131009 - 0.884078I$ $b = 1.240200 - 0.434590I$	$-6.56035 + 9.36152I$	0
$u = 0.513312 + 0.101132I$ $a = 0.925268 - 0.379313I$ $b = -0.165385$	-0.942376	$-9.38299 + 0.I$
$u = 0.513312 - 0.101132I$ $a = 0.925268 + 0.379313I$ $b = -0.165385$	-0.942376	$-9.38299 + 0.I$
$u = -0.505572 + 0.039267I$ $a = -0.19450 - 2.64824I$ $b = -0.20707 - 3.33341I$	$1.81502 - 2.87998I$	$-58.6220 + 17.5185I$
$u = -0.505572 - 0.039267I$ $a = -0.19450 + 2.64824I$ $b = -0.20707 + 3.33341I$	$1.81502 + 2.87998I$	$-58.6220 - 17.5185I$
$u = 0.00112 + 1.52275I$ $a = 0.604691 + 0.008340I$ $b = 0.209786 - 0.307915I$	$4.90257 - 1.34329I$	0

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.00112 - 1.52275I$ $a = 0.604691 - 0.008340I$ $b = 0.209786 + 0.307915I$	$4.90257 + 1.34329I$	0
$u = -1.52437$ $a = 0.237820$ $b = 0.405949$	-10.6310	0
$u = 0.84107 + 1.28967I$ $a = -0.900638 + 0.036014I$ $b = -1.28128 - 1.27353I$	$-1.66044 - 11.01250I$	0
$u = 0.84107 - 1.28967I$ $a = -0.900638 - 0.036014I$ $b = -1.28128 + 1.27353I$	$-1.66044 + 11.01250I$	0
$u = 0.30639 + 1.60183I$ $a = -0.574465 + 0.042578I$ $b = -0.254583 - 0.569117I$	$4.34822 - 5.30129I$	0
$u = 0.30639 - 1.60183I$ $a = -0.574465 - 0.042578I$ $b = -0.254583 + 0.569117I$	$4.34822 + 5.30129I$	0
$u = -0.362526$ $a = 4.20485$ $b = 0.405949$	-10.6310	-48.5360
$u = -0.147181$ $a = -4.08603$ $b = -7.40752$	-2.67255	-211.680

III. $I_3^u = \langle u^2 + b + 2,\ a + 1,\ u^3 - u^2 + 2u - 1\rangle$

(i) Arc colorings

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

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

$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

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

$$a_6 = \begin{pmatrix} u \\ u^2 - u + 1 \end{pmatrix}$$

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

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

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

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

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

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -8u^2 + 8u - 20$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = \ \ 0.215080 + 1.307140I$ $a = -1.00000$ $b = -0.337641 - 0.562280I$	$6.04826 - 5.65624I$	$-4.98049 + 5.95889I$
$u = \ \ 0.215080 - 1.307140I$ $a = -1.00000$ $b = -0.337641 + 0.562280I$	$6.04826 + 5.65624I$	$-4.98049 - 5.95889I$
$u = \ \ 0.569840$ $a = -1.00000$ $b = -2.32472$	-2.22691	-18.0390

IV.

$\boldsymbol{I^u_4 = \langle -2au + b + 2u - 1,\ u^2a + a^2 - au + 3u^2 + a - u + 5,\ u^3 - u^2 + 2u - 1\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} a \\ 2au - 2u + 1 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -au + 2u^2 + a - u + 3 \\ au + 2u^2 - u + 4 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ u^2 - u + 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u \\ u^2 - u + 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u \\ -u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0 \\ -u \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} a \\ u^2a + 2au - 2u + 1 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -au + u^2 + 1 \\ -2u^2a + 3au + u^2 - 2a - 3u + 3 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -au + 2u^2 + a - u + 3 \\ au + 2u^2 - u + 4 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 11u^2a + 5au - 5u + 15$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_4^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.215080 + 1.307140I$ $a = 0.947279 + 0.320410I$ $b = 0.139681$	6.04826	$-6.45445 + 0.I$
$u = 0.215080 + 1.307140I$ $a = -0.069840 + 0.424452I$ $b = -0.56984 - 2.61428I$	$1.91067 - 2.82812I$	$9.7272 - 14.7292I$
$u = 0.215080 - 1.307140I$ $a = 0.947279 - 0.320410I$ $b = 0.139681$	6.04826	$-6.45445 + 0.I$
$u = 0.215080 - 1.307140I$ $a = -0.069840 - 0.424452I$ $b = -0.56984 + 2.61428I$	$1.91067 + 2.82812I$	$9.7272 + 14.7292I$
$u = 0.569840$ $a = -0.37744 + 2.29387I$ $b = -0.56984 + 2.61428I$	$1.91067 + 2.82812I$	$9.7272 + 14.7292I$
$u = 0.569840$ $a = -0.37744 - 2.29387I$ $b = -0.56984 - 2.61428I$	$1.91067 - 2.82812I$	$9.7272 - 14.7292I$

V. $I^u_5 = \langle b + 2u + 3,\ a,\ u^2 + u - 1\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ -u + 1 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ -2u - 3 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u \\ 3u - 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} u \\ u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} u \\ u - 1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 2u - 1 \\ u - 1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 2u - 1 \\ -u - 4 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 0 \\ -2u - 3 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -2u + 1 \\ -u + 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 29$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_5^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.618034$ $a = 0$ $b = -4.23607$	-2.63189	29.0000
$u = -1.61803$ $a = 0$ $b = 0.236068$	-10.5276	29.0000

VI. $I_1^v = \langle a,\ 3b + 2v + 13,\ v^2 + 7v + 1\rangle$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 0 \\ -\frac{2}{3}v - \frac{13}{3} \end{pmatrix}$$
$$a_8 = \begin{pmatrix} v \\ -\frac{1}{3}v - \frac{8}{3} \end{pmatrix}$$
$$a_6 = \begin{pmatrix} v \\ 0 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -\frac{5}{3}v - \frac{1}{3} \\ 1 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} \frac{5}{3}v + \frac{4}{3} \\ -1 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} \frac{5}{3}v + \frac{1}{3} \\ -1 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} \frac{13}{3}v + \frac{2}{3} \\ -\frac{1}{3}v - \frac{14}{3} \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -\frac{5}{3}v - \frac{1}{3} \\ -v - 6 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} \frac{16}{3}v + \frac{2}{3} \\ -3 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 29$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^v	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$v = -0.145898$ $a = 0$ $b = -4.23607$	-2.63189	29.0000
$v = -6.85410$ $a = 0$ $b = 0.236068$	-10.5276	29.0000

VII. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_{11}	$((u-1)^2)(u^2-3u+1)(u^3-u^2+2u-1)^3(u^{14}+9u^{13}+\cdots+16u+1)$ $\cdot(u^{58}+32u^{57}+\cdots+25u+1)$
c_2, c_9	$((u-1)^2)(u^2+u-1)(u^3+u^2-1)^3(u^{14}-3u^{13}+\cdots-2u-1)$ $\cdot(u^{58}-4u^{57}+\cdots+5u+1)$
c_3, c_7	$u^2(u^2+u-1)(u^3-u^2+2u-1)^3(u^{14}-u^{13}+\cdots-4u-1)$ $\cdot(u^{58}-4u^{57}+\cdots+32u-4)$
c_4, c_{12}	$((u+1)^2)(u^2-u-1)(u^3-u^2+1)^3(u^{14}-3u^{13}+\cdots-2u-1)$ $\cdot(u^{58}-4u^{57}+\cdots+5u+1)$
c_5	$u^9(u^2-3u+1)^2(u^{14}-7u^{13}+\cdots-24u+8)$ $\cdot(u^{29}+2u^{28}+\cdots-28u-8)^2$
c_6, c_{10}	$u^2(u^2-u-1)(u^3+u^2+2u+1)^3(u^{14}-u^{13}+\cdots-4u-1)$ $\cdot(u^{58}-4u^{57}+\cdots+32u-4)$
c_8	$u^9(u^2+3u+1)^2(u^{14}-7u^{13}+\cdots-24u+8)$ $\cdot(u^{29}+2u^{28}+\cdots-28u-8)^2$

VIII. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_{11}	$((y-1)^2)(y^2-7y+1)(y^3+3y^2+2y-1)^3(y^{14}-5y^{13}+\cdots-208y+1)$ $\cdot\,(y^{58}-8y^{57}+\cdots+195y+1)$
c_2, c_4, c_9 c_{12}	$((y-1)^2)(y^2-3y+1)(y^3-y^2+2y-1)^3(y^{14}-9y^{13}+\cdots-16y+1)$ $\cdot\,(y^{58}-32y^{57}+\cdots-25y+1)$
c_3, c_6, c_7 c_{10}	$y^2(y^2-3y+1)(y^3+3y^2+2y-1)^3(y^{14}+3y^{13}+\cdots-8y+1)$ $\cdot\,(y^{58}+18y^{57}+\cdots-984y+16)$
c_5, c_8	$y^9(y^2-7y+1)^2(y^{14}-7y^{13}+\cdots+384y+64)$ $\cdot\,(y^{29}-28y^{28}+\cdots+2896y-64)^2$