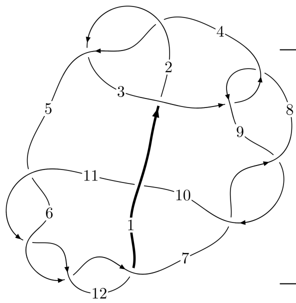
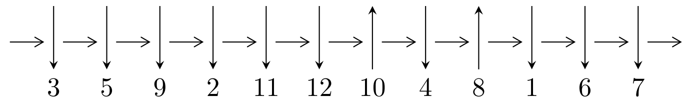
$12a_{0158}$ $(K12a_{0158})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -4.37013\times10^{32}u^{60} + 1.07931\times10^{33}u^{59} + \cdots + 2.13053\times10^{33}b + 2.55159\times10^{32},$$
$$-1.77317\times10^{32}u^{60} + 4.83859\times10^{32}u^{59} + \cdots + 1.06527\times10^{33}a + 3.22263\times10^{33},\ u^{61} - u^{60} + \cdots + 8u +$$

$$I_1^v = \langle a,\ b + v + 1,\ v^2 + v - 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 63 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.

$\boldsymbol{I_1^u = \langle -4.37\times10^{32}u^{60}+1.08\times10^{33}u^{59}+\cdots+2.13\times10^{33}b+2.55\times10^{32},\ -1.77\times10^{32}u^{60}+4.84\times10^{32}u^{59}+\cdots+1.07\times10^{33}a+3.22\times10^{33},\ u^{61}-u^{60}+\cdots+8u+4\rangle}$

(i) Arc colorings

$$a_4 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.166453u^{60} - 0.454214u^{59} + \cdots - 5.04302u - 3.02519 \\ 0.205119u^{60} - 0.506592u^{59} + \cdots + 1.80715u - 0.119763 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} u^2+1 \\ u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} -0.0499331u^{60} - 0.0191878u^{59} + \cdots + 4.34689u + 1.61382 \\ 0.531140u^{60} - 0.796906u^{59} + \cdots + 4.86494u + 0.379014 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} u \\ u^3+u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.308153u^{60} - 0.583793u^{59} + \cdots - 4.74082u - 3.17923 \\ 0.351153u^{60} - 0.680255u^{59} + \cdots + 1.44558u - 0.322290 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0.152571u^{60} - 0.191082u^{59} + \cdots + 5.21389u + 1.75438 \\ 0.319024u^{60} - 0.645296u^{59} + \cdots + 0.170875u - 1.27081 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u^4+u^2+1 \\ u^4 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.394171u^{60} - 0.666399u^{59} + \cdots - 4.85797u - 3.23772 \\ 0.323761u^{60} - 0.610161u^{59} + \cdots - 0.328448u - 1.25482 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} -0.711527u^{60} + 0.890795u^{59} + \cdots - 2.81563u - 0.209751 \\ -0.127525u^{60} + 0.512045u^{59} + \cdots - 3.76247u - 1.00960 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -1.26579u^{60} + 1.94808u^{59} + \cdots + 11.8662u - 2.65853$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{61} + 35u^{60} + \cdots + 40u + 1$
c_2, c_4	$u^{61} - 3u^{60} + \cdots + 2u + 1$
c_3, c_8	$u^{61} - u^{60} + \cdots + 8u + 4$
c_5, c_6, c_{11} c_{12}	$u^{61} + 2u^{60} + \cdots + u + 1$
c_7, c_9	$u^{61} - 15u^{60} + \cdots - 88u + 16$
c_{10}	$u^{61} - 20u^{60} + \cdots - 33811u + 6497$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{61} - 15y^{60} + \cdots + 992y - 1$
c_2, c_4	$y^{61} - 35y^{60} + \cdots + 40y - 1$
c_3, c_8	$y^{61} + 15y^{60} + \cdots - 88y - 16$
c_5, c_6, c_{11} c_{12}	$y^{61} - 72y^{60} + \cdots + 13y - 1$
c_7, c_9	$y^{61} + 59y^{60} + \cdots + 9760y - 256$
c_{10}	$y^{61} - 36y^{60} + \cdots - 229814295y - 42211009$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.238487 + 0.953197I$ $a = -0.003755 + 0.877090I$ $b = -0.178706 + 0.107732I$	$2.09116 + 2.27253I$	$-4.25062 - 5.15678I$
$u = -0.238487 - 0.953197I$ $a = -0.003755 - 0.877090I$ $b = -0.178706 - 0.107732I$	$2.09116 - 2.27253I$	$-4.25062 + 5.15678I$
$u = -0.307970 + 0.970251I$ $a = 0.0336117 - 0.1292320I$ $b = 0.942071 + 0.219289I$	$1.65969 + 3.31321I$	$-4.58003 - 3.95738I$
$u = -0.307970 - 0.970251I$ $a = 0.0336117 + 0.1292320I$ $b = 0.942071 - 0.219289I$	$1.65969 - 3.31321I$	$-4.58003 + 3.95738I$
$u = -0.877601 + 0.378203I$ $a = 0.207288 - 0.357685I$ $b = 0.447467 + 0.371493I$	$-9.07110 - 3.90521I$	$-14.6512 + 4.5873I$
$u = -0.877601 - 0.378203I$ $a = 0.207288 + 0.357685I$ $b = 0.447467 - 0.371493I$	$-9.07110 + 3.90521I$	$-14.6512 - 4.5873I$
$u = 0.084785 + 0.946752I$ $a = -0.080363 + 0.669261I$ $b = 0.531909 + 0.161258I$	$2.57667 + 0.91135I$	$-2.15381 - 4.08068I$
$u = 0.084785 - 0.946752I$ $a = -0.080363 - 0.669261I$ $b = 0.531909 - 0.161258I$	$2.57667 - 0.91135I$	$-2.15381 + 4.08068I$
$u = 0.077209 + 1.056450I$ $a = 0.297681 + 0.382384I$ $b = -0.928442 + 0.127233I$	$-3.28717 - 2.31394I$	$-7.12059 + 3.62918I$
$u = 0.077209 - 1.056450I$ $a = 0.297681 - 0.382384I$ $b = -0.928442 - 0.127233I$	$-3.28717 + 2.31394I$	$-7.12059 - 3.62918I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.359746 + 1.016880I$ $a = 0.062599 + 1.101460I$ $b = -0.217088 + 0.019866I$	$-4.85916 - 4.06193I$	$-8.00000 + 3.62400I$
$u = 0.359746 - 1.016880I$ $a = 0.062599 - 1.101460I$ $b = -0.217088 - 0.019866I$	$-4.85916 + 4.06193I$	$-8.00000 - 3.62400I$
$u = 0.410008 + 1.014890I$ $a = -0.012002 - 0.459759I$ $b = -0.721661 + 0.144626I$	$0.62509 - 6.72372I$	$-8.00000 + 10.31873I$
$u = 0.410008 - 1.014890I$ $a = -0.012002 + 0.459759I$ $b = -0.721661 - 0.144626I$	$0.62509 + 6.72372I$	$-8.00000 - 10.31873I$
$u = 0.808032 + 0.816831I$ $a = 1.00805 + 1.02708I$ $b = 0.03711 + 1.94913I$	$-4.47605 + 0.47564I$	0
$u = 0.808032 - 0.816831I$ $a = 1.00805 - 1.02708I$ $b = 0.03711 - 1.94913I$	$-4.47605 - 0.47564I$	0
$u = -0.749510 + 0.886201I$ $a = -0.87056 + 1.16887I$ $b = 0.43430 + 1.70385I$	$-1.90394 + 2.84541I$	0
$u = -0.749510 - 0.886201I$ $a = -0.87056 - 1.16887I$ $b = 0.43430 - 1.70385I$	$-1.90394 - 2.84541I$	0
$u = -0.316577 + 0.775281I$ $a = 0.34310 - 2.42404I$ $b = -0.749506 + 0.387164I$	$-9.89951 + 1.70824I$	$-13.49720 - 3.89995I$
$u = -0.316577 - 0.775281I$ $a = 0.34310 + 2.42404I$ $b = -0.749506 - 0.387164I$	$-9.89951 - 1.70824I$	$-13.49720 + 3.89995I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.489410 + 1.059940I$ $a = -0.038865 - 0.755001I$ $b = 0.369249 + 0.129881I$	$-6.69274 + 8.82294I$	0
$u = -0.489410 - 1.059940I$ $a = -0.038865 + 0.755001I$ $b = 0.369249 - 0.129881I$	$-6.69274 - 8.82294I$	0
$u = 0.849526 + 0.813861I$ $a = -1.44747 - 1.16596I$ $b = -0.11881 - 1.83683I$	$-5.74001 + 1.43814I$	0
$u = 0.849526 - 0.813861I$ $a = -1.44747 + 1.16596I$ $b = -0.11881 + 1.83683I$	$-5.74001 - 1.43814I$	0
$u = 0.757519 + 0.305031I$ $a = 0.149859 - 0.548164I$ $b = -0.040871 + 0.285650I$	$-1.78875 + 2.52359I$	$-12.4907 - 7.4949I$
$u = 0.757519 - 0.305031I$ $a = 0.149859 + 0.548164I$ $b = -0.040871 - 0.285650I$	$-1.78875 - 2.52359I$	$-12.4907 + 7.4949I$
$u = -0.874218 + 0.804569I$ $a = -1.15410 + 0.99565I$ $b = -0.28100 + 2.30195I$	$-12.87930 - 2.42278I$	0
$u = -0.874218 - 0.804569I$ $a = -1.15410 - 0.99565I$ $b = -0.28100 - 2.30195I$	$-12.87930 + 2.42278I$	0
$u = -0.821847 + 0.871851I$ $a = 1.56651 - 1.37568I$ $b = -0.35452 - 2.07289I$	$-8.17948 + 2.03351I$	0
$u = -0.821847 - 0.871851I$ $a = 1.56651 + 1.37568I$ $b = -0.35452 + 2.07289I$	$-8.17948 - 2.03351I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.241710 + 0.747099I$ $a = -0.465874 + 0.305697I$ $b = -1.270210 + 0.529709I$	$-1.94835 - 1.41549I$	$-11.33185 + 4.43113I$
$u = 0.241710 - 0.747099I$ $a = -0.465874 - 0.305697I$ $b = -1.270210 - 0.529709I$	$-1.94835 + 1.41549I$	$-11.33185 - 4.43113I$
$u = 0.772724 + 0.137846I$ $a = 0.672930 + 0.110054I$ $b = 0.895434 - 0.127416I$	$-7.72551 + 0.23364I$	$-12.50787 + 1.31729I$
$u = 0.772724 - 0.137846I$ $a = 0.672930 - 0.110054I$ $b = 0.895434 + 0.127416I$	$-7.72551 - 0.23364I$	$-12.50787 - 1.31729I$
$u = -0.909481 + 0.809234I$ $a = 1.55609 - 0.96630I$ $b = 0.57813 - 2.04844I$	$-8.07107 - 4.97454I$	0
$u = -0.909481 - 0.809234I$ $a = 1.55609 + 0.96630I$ $b = 0.57813 + 2.04844I$	$-8.07107 + 4.97454I$	0
$u = 0.836848 + 0.884467I$ $a = -1.10413 - 1.59303I$ $b = -0.05000 - 2.92120I$	$-16.6735 - 2.0703I$	0
$u = 0.836848 - 0.884467I$ $a = -1.10413 + 1.59303I$ $b = -0.05000 + 2.92120I$	$-16.6735 + 2.0703I$	0
$u = -0.805476 + 0.918966I$ $a = 0.92783 - 1.56312I$ $b = -0.19783 - 2.45697I$	$-8.03154 + 4.05119I$	0
$u = -0.805476 - 0.918966I$ $a = 0.92783 + 1.56312I$ $b = -0.19783 + 2.45697I$	$-8.03154 - 4.05119I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.776141 + 0.950673I$ $a = 0.90967 + 1.32399I$ $b = -0.83918 + 1.88849I$	$-4.06730 - 6.42529I$	0
$u = 0.776141 - 0.950673I$ $a = 0.90967 - 1.32399I$ $b = -0.83918 - 1.88849I$	$-4.06730 + 6.42529I$	0
$u = 0.824923 + 0.918769I$ $a = -1.71708 - 1.47330I$ $b = 0.63383 - 2.39142I$	$-16.5663 - 4.1225I$	0
$u = 0.824923 - 0.918769I$ $a = -1.71708 + 1.47330I$ $b = 0.63383 + 2.39142I$	$-16.5663 + 4.1225I$	0
$u = 0.797214 + 0.969907I$ $a = -0.74216 - 1.63736I$ $b = 0.66652 - 2.12988I$	$-5.25621 - 7.57674I$	0
$u = 0.797214 - 0.969907I$ $a = -0.74216 + 1.63736I$ $b = 0.66652 + 2.12988I$	$-5.25621 + 7.57674I$	0
$u = 0.949600 + 0.823547I$ $a = -1.68518 - 0.86336I$ $b = -0.86700 - 2.32515I$	$-16.4115 + 7.1396I$	0
$u = 0.949600 - 0.823547I$ $a = -1.68518 + 0.86336I$ $b = -0.86700 + 2.32515I$	$-16.4115 - 7.1396I$	0
$u = -0.806362 + 0.985930I$ $a = -0.96958 + 1.42164I$ $b = 1.10553 + 2.10803I$	$-12.3142 + 8.6618I$	0
$u = -0.806362 - 0.985930I$ $a = -0.96958 - 1.42164I$ $b = 1.10553 - 2.10803I$	$-12.3142 - 8.6618I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.823074 + 1.001050I$ $a = 0.68683 - 1.78798I$ $b = -1.13111 - 2.20407I$	$-7.46084 + 11.37220I$	0
$u = -0.823074 - 1.001050I$ $a = 0.68683 + 1.78798I$ $b = -1.13111 + 2.20407I$	$-7.46084 - 11.37220I$	0
$u = 0.848261 + 1.018330I$ $a = -0.67747 - 1.91157I$ $b = 1.48348 - 2.35344I$	$-15.7786 - 13.7453I$	0
$u = 0.848261 - 1.018330I$ $a = -0.67747 + 1.91157I$ $b = 1.48348 + 2.35344I$	$-15.7786 + 13.7453I$	0
$u = -0.308299 + 0.596152I$ $a = 0.945489 + 0.457470I$ $b = 2.00842 + 0.79172I$	$-10.52170 + 0.86189I$	$-12.7781 - 7.9081I$
$u = -0.308299 - 0.596152I$ $a = 0.945489 - 0.457470I$ $b = 2.00842 - 0.79172I$	$-10.52170 - 0.86189I$	$-12.7781 + 7.9081I$
$u = 0.254491 + 0.574517I$ $a = 0.11821 - 2.36867I$ $b = 0.311978 + 0.275962I$	$-2.54655 - 0.75490I$	$-10.56290 + 9.15741I$
$u = 0.254491 - 0.574517I$ $a = 0.11821 + 2.36867I$ $b = 0.311978 - 0.275962I$	$-2.54655 + 0.75490I$	$-10.56290 - 9.15741I$
$u = -0.612829 + 0.106029I$ $a = -0.809358 - 0.377022I$ $b = -0.294046 + 0.149479I$	$-1.002850 - 0.150257I$	$-9.43253 - 1.75186I$
$u = -0.612829 - 0.106029I$ $a = -0.809358 + 0.377022I$ $b = -0.294046 - 0.149479I$	$-1.002850 + 0.150257I$	$-9.43253 + 1.75186I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.415187$ $a=-0.415618$ $b=-0.410931$	-0.737929	-13.3140

II. $I_1^v = \langle a,\ b + v + 1,\ v^2 + v - 1 \rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -15$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u-1)^2$
c_3, c_7, c_8 c_9	u^2
c_4	$(u+1)^2$
c_5, c_6, c_{10}	u^2+u-1
c_{11}, 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_7, c_8 c_9	y^2
c_5, c_6, c_{10} c_{11}, 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
$v = 0.618034$ $a = 0$ $b = -1.61803$	-10.5276	-15.0000
$v = -1.61803$ $a = 0$ $b = 0.618034$	-2.63189	-15.0000

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^2)(u^{61}+35u^{60}+\cdots+40u+1)$
c_2	$((u-1)^2)(u^{61}-3u^{60}+\cdots+2u+1)$
c_3, c_8	$u^2(u^{61}-u^{60}+\cdots+8u+4)$
c_4	$((u+1)^2)(u^{61}-3u^{60}+\cdots+2u+1)$
c_5, c_6	$(u^2+u-1)(u^{61}+2u^{60}+\cdots+u+1)$
c_7, c_9	$u^2(u^{61}-15u^{60}+\cdots-88u+16)$
c_{10}	$(u^2+u-1)(u^{61}-20u^{60}+\cdots-33811u+6497)$
c_{11}, c_{12}	$(u^2-u-1)(u^{61}+2u^{60}+\cdots+u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^2)(y^{61}-15y^{60}+\cdots+992y-1)$
c_2, c_4	$((y-1)^2)(y^{61}-35y^{60}+\cdots+40y-1)$
c_3, c_8	$y^2(y^{61}+15y^{60}+\cdots-88y-16)$
c_5, c_6, c_{11} c_{12}	$(y^2-3y+1)(y^{61}-72y^{60}+\cdots+13y-1)$
c_7, c_9	$y^2(y^{61}+59y^{60}+\cdots+9760y-256)$
c_{10}	$(y^2-3y+1)(y^{61}-36y^{60}+\cdots-2.29814\times10^8y-4.22110\times10^7)$