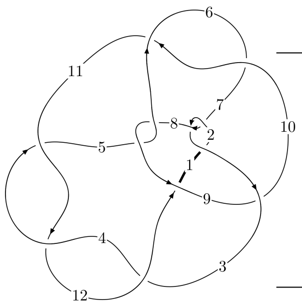
$12n_{0655}$ ($K12n_{0655}$)



A knot diagram[1]

Linearized knot diagam

3 8 12 11 9 10 2 6 3 6 4 9

Solving Sequence

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

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

$$
\begin{aligned}
I_1^u = \langle & 8082770070u^{10} + 12874278132u^9 + \cdots + 785795137031b + 583530199807, \\
& -10533832913358u^{10} - 20498499647469u^9 + \cdots + 43925948159977a - 453136624250477, \\
& u^{11} + u^{10} - 25u^9 + 84u^8 - 4u^7 - 295u^6 + 294u^5 + 266u^4 - 592u^3 + 258u^2 + 53u - 43\rangle \\
I_2^u = \langle & -13u^{11} + 11u^{10} - 7u^9 + 26u^8 + 50u^7 - 47u^6 + 8u^5 - 54u^4 - 44u^3 + 10u^2 + 46b + 21u + 53, \\
& 8u^{11} + 18u^{10} - u^9 + 30u^8 - 52u^7 - 33u^6 + 11u^5 - 57u^4 + 66u^3 + 54u^2 + 23a + 26u + 1, \\
& u^{12} + 2u^{10} - u^9 - 2u^8 - u^7 - 3u^6 + 2u^5 + 2u^4 + 4u^3 + u^2 - 1\rangle \\
I_3^u = \langle & b^2 - b + 1,\ a - 1,\ u - 1\rangle
\end{aligned}
$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 25 representations.

---

[1]The image of knot diagram is generated by the software "**Draw programme**" developed by Andrew Bartholomew(`http://www.layer8.co.uk/maths/draw/index.htm#Running-draw`), where we modified some parts for our purpose(`https://github.com/CATsTAILs/LinksPainter`).

[2]All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

I.
$\boldsymbol{I_1^u = \langle 8.08 \times 10^9 u^{10} + 1.29 \times 10^{10} u^9 + \cdots + 7.86 \times 10^{10} b + 5.84 \times 10^{11},\ -1.05 \times 10^{13} u^{10} - 2.05 \times 10^{13} u^9 + \cdots + 4.39 \times 10^{13} a - 4.53 \times 10^{14},\ u^{11} + u^{10} + \cdots + 53u - 43 \rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_6 = \begin{pmatrix} 0.239809u^{10} + 0.466660u^9 + \cdots - 5.07748u + 10.3159 \\ -0.102861u^{10} - 0.163838u^9 + \cdots - 2.44421u - 7.42598 \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1.00685u^{10} + 1.73463u^9 + \cdots + 5.81239u + 59.4569 \\ 0.149991u^{10} + 0.294158u^9 + \cdots - 2.04642u + 6.58542 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} 0.136948u^{10} + 0.302823u^9 + \cdots - 7.52169u + 2.88994 \\ -0.102861u^{10} - 0.163838u^9 + \cdots - 2.44421u - 7.42598 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -0.0526849u^{10} - 0.162132u^9 + \cdots + 7.57873u + 2.62004 \\ 0.214365u^{10} + 0.374779u^9 + \cdots + 1.03850u + 11.9120 \end{pmatrix}$$
$$a_8 = \begin{pmatrix} -0.240845u^{10} - 0.364372u^9 + \cdots - 6.91721u - 16.6179 \\ -0.192976u^{10} - 0.323582u^9 + \cdots - 1.76300u - 11.8971 \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0.672190u^{10} + 1.17359u^9 + \cdots + 5.50874u + 38.9931 \\ 0.241840u^{10} + 0.437101u^9 + \cdots + 1.35348u + 12.9629 \end{pmatrix}$$
$$a_1 = \begin{pmatrix} 0.672190u^{10} + 1.17359u^9 + \cdots + 5.50874u + 38.9931 \\ -0.145871u^{10} - 0.264230u^9 + \cdots - 0.976455u - 8.59734 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} 0.539583u^{10} + 0.987055u^9 + \cdots - 4.34462u + 27.4965 \\ 0.0516713u^{10} + 0.0842453u^9 + \cdots - 1.24682u + 2.06071 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 0.526320u^{10} + 0.909361u^9 + \cdots + 4.53228u + 30.3957 \\ -0.145871u^{10} - 0.264230u^9 + \cdots - 0.976455u - 8.59734 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= \frac{1137457766308}{1021533678139}u^{10} + \frac{2052116979712}{1021533678139}u^9 + \cdots + \frac{13195254097138}{1021533678139}u + \frac{47127968197766}{1021533678139}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{11} + 30u^{10} + \cdots + 46180u + 6241$
c_2, c_7	$u^{11} + 2u^{10} + \cdots + 290u + 79$
c_3, c_4, c_{11}	$u^{11} - 3u^{10} + \cdots - 4u + 1$
c_5, c_8	$u^{11} - 6u^{10} + \cdots + 59u + 14$
c_6, c_{10}	$u^{11} + 16u^{10} + \cdots - 1205u - 239$
c_9	$u^{11} + u^{10} + \cdots + 53u - 43$
c_{12}	$u^{11} + 2u^{10} + \cdots - 9u - 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{11} - 270y^{10} + \cdots + 1320014200y - 38950081$
c_2, c_7	$y^{11} - 30y^{10} + \cdots + 46180y - 6241$
c_3, c_4, c_{11}	$y^{11} + 9y^{10} + \cdots + 78y - 1$
c_5, c_8	$y^{11} - 24y^{10} + \cdots + 4069y - 196$
c_6, c_{10}	$y^{11} - 94y^{10} + \cdots + 639425y - 57121$
c_9	$y^{11} - 51y^{10} + \cdots + 24997y - 1849$
c_{12}	$y^{11} - 28y^{10} + \cdots + 289y - 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.14783$ $a = -0.625800$ $b = 0.599073$	-7.73425	-2.27460
$u = 0.961384 + 0.663629I$ $a = 0.896764 - 0.517452I$ $b = 0.196134 + 1.286040I$	$1.65294 + 2.05058I$	$-10.88896 - 3.66206I$
$u = 0.961384 - 0.663629I$ $a = 0.896764 + 0.517452I$ $b = 0.196134 - 1.286040I$	$1.65294 - 2.05058I$	$-10.88896 + 3.66206I$
$u = 0.729816 + 0.078717I$ $a = -2.86559 - 0.69887I$ $b = -0.674831 + 0.650678I$	$9.56370 + 2.81490I$	$-11.11373 - 3.91531I$
$u = 0.729816 - 0.078717I$ $a = -2.86559 + 0.69887I$ $b = -0.674831 - 0.650678I$	$9.56370 - 2.81490I$	$-11.11373 + 3.91531I$
$u = -1.47245 + 0.38796I$ $a = -0.199156 - 0.028059I$ $b = -1.09827 - 0.95568I$	$-1.22023 - 2.91334I$	$-10.21854 + 2.00386I$
$u = -1.47245 - 0.38796I$ $a = -0.199156 + 0.028059I$ $b = -1.09827 + 0.95568I$	$-1.22023 + 2.91334I$	$-10.21854 - 2.00386I$
$u = -0.357190$ $a = 0.642478$ $b = -0.230598$	-0.556349	-18.0810
$u = 2.17516 + 2.14936I$ $a = 0.426144 - 0.535385I$ $b = 1.92336 + 1.67643I$	$-15.4000 - 9.3794I$	$-9.97556 + 3.09821I$
$u = 2.17516 - 2.14936I$ $a = 0.426144 + 0.535385I$ $b = 1.92336 - 1.67643I$	$-15.4000 + 9.3794I$	$-9.97556 - 3.09821I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -6.57845$ $a = \quad 0.327461$ $b = \quad 4.93875$	17.4529	-11.2510

II. $I_2^u = \langle -13u^{11} + 11u^{10} + \cdots + 46b + 53,\ 8u^{11} + 18u^{10} + \cdots + 23a + 1,\ u^{12} + 2u^{10} + \cdots + u^2 - 1 \rangle$

(i) Arc colorings

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

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

$$a_6 = \begin{pmatrix} -0.347826u^{11} - 0.782609u^{10} + \cdots - 1.13043u - 0.0434783 \\ 0.282609u^{11} - 0.239130u^{10} + \cdots - 0.456522u - 1.15217 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} -1.02174u^{11} + 1.32609u^{10} + \cdots + 2.80435u + 0.934783 \\ u^2 + 1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -0.0652174u^{11} - 1.02174u^{10} + \cdots - 1.58696u - 1.19565 \\ 0.282609u^{11} - 0.239130u^{10} + \cdots - 0.456522u - 1.15217 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} 0.891304u^{11} - 0.369565u^{10} + \cdots - 1.97826u - 1.32609 \\ 0.586957u^{11} - 0.804348u^{10} + \cdots - 0.717391u - 0.239130 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -0.456522u^{11} - 0.152174u^{10} + \cdots - 0.108696u - 0.369565 \\ 0.282609u^{11} - 0.239130u^{10} + \cdots - 0.456522u - 1.15217 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} 0.630435u^{11} - 0.456522u^{10} + \cdots - 0.326087u - 0.108696 \\ 0.239130u^{11} + 0.413043u^{10} + \cdots + 2.15217u - 0.282609 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.630435u^{11} - 0.456522u^{10} + \cdots - 0.326087u - 0.108696 \\ 0.391304u^{11} + 0.130435u^{10} + \cdots + 1.52174u + 0.173913 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} 0.108696u^{11} - 0.630435u^{10} + \cdots - 1.02174u + 0.326087 \\ -1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1.02174u^{11} - 0.326087u^{10} + \cdots + 1.19565u + 0.0652174 \\ 0.391304u^{11} + 0.130435u^{10} + \cdots + 1.52174u + 0.173913 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes
$= \frac{18}{23}u^{11} - \frac{63}{23}u^{10} + \frac{84}{23}u^9 - \frac{151}{23}u^8 + \frac{113}{23}u^7 + \frac{58}{23}u^6 - \frac{50}{23}u^5 + \frac{188}{23}u^4 - \frac{139}{23}u^3 - \frac{74}{23}u^2 - \frac{160}{23}u - \frac{153}{23}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{12} - 12u^{11} + \cdots - 14u + 1$
c_2	$u^{12} - 6u^{10} + u^9 + 15u^8 - 4u^7 - 21u^6 + 5u^5 + 17u^4 - 3u^3 - 7u^2 + 1$
c_3, c_4	$u^{12} + u^{11} + \cdots - 2u^2 - 1$
c_5	$u^{12} - 3u^{11} + 5u^{10} - 5u^9 + 5u^7 - 5u^6 + 2u^5 + 3u^4 - 3u^3 - 1$
c_6	$u^{12} + 3u^9 - 3u^8 - 2u^7 + 5u^6 - 5u^5 + 5u^3 - 5u^2 + 3u - 1$
c_7	$u^{12} - 6u^{10} - u^9 + 15u^8 + 4u^7 - 21u^6 - 5u^5 + 17u^4 + 3u^3 - 7u^2 + 1$
c_8	$u^{12} + 3u^{11} + 5u^{10} + 5u^9 - 5u^7 - 5u^6 - 2u^5 + 3u^4 + 3u^3 - 1$
c_9	$u^{12} + 2u^{10} - u^9 - 2u^8 - u^7 - 3u^6 + 2u^5 + 2u^4 + 4u^3 + u^2 - 1$
c_{10}	$u^{12} - 3u^9 - 3u^8 + 2u^7 + 5u^6 + 5u^5 - 5u^3 - 5u^2 - 3u - 1$
c_{11}	$u^{12} - u^{11} + \cdots - 2u^2 - 1$
c_{12}	$u^{12} - 4u^{11} + \cdots + 14u + 13$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{12} - 12y^{11} + \cdots - 30y + 1$
c_2, c_7	$y^{12} - 12y^{11} + \cdots - 14y + 1$
c_3, c_4, c_{11}	$y^{12} + 15y^{11} + \cdots + 4y + 1$
c_5, c_8	$y^{12} + y^{11} + \cdots - 6y^2 + 1$
c_6, c_{10}	$y^{12} - 6y^{10} + \cdots + y + 1$
c_9	$y^{12} + 4y^{11} + \cdots - 2y + 1$
c_{12}	$y^{12} - 18y^{11} + \cdots + 298y + 169$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.290321 + 0.812321I$ $a = 1.60962 + 2.31665I$ $b = -0.148186 - 0.670337I$	$10.30340 - 2.52674I$	$-1.40798 + 1.03113I$
$u = -0.290321 - 0.812321I$ $a = 1.60962 - 2.31665I$ $b = -0.148186 + 0.670337I$	$10.30340 + 2.52674I$	$-1.40798 - 1.03113I$
$u = -1.14608$ $a = -0.443256$ $b = 0.750402$	-8.04457	-28.6700
$u = 1.126080 + 0.271306I$ $a = -0.106545 + 0.615518I$ $b = 0.727354 + 0.248918I$	$-3.20078 - 2.30167I$	$-14.2286 + 2.6049I$
$u = 1.126080 - 0.271306I$ $a = -0.106545 - 0.615518I$ $b = 0.727354 - 0.248918I$	$-3.20078 + 2.30167I$	$-14.2286 - 2.6049I$
$u = 0.184248 + 1.148890I$ $a = 0.47497 - 1.34357I$ $b = -0.296082 + 1.038070I$	$2.61823 + 1.74326I$	$-3.69799 - 2.86039I$
$u = 0.184248 - 1.148890I$ $a = 0.47497 + 1.34357I$ $b = -0.296082 - 1.038070I$	$2.61823 - 1.74326I$	$-3.69799 + 2.86039I$
$u = -0.564251 + 0.474715I$ $a = -1.270550 - 0.606648I$ $b = -1.199700 + 0.382821I$	$0.75595 + 3.94751I$	$-8.05344 - 4.79157I$
$u = -0.564251 - 0.474715I$ $a = -1.270550 + 0.606648I$ $b = -1.199700 - 0.382821I$	$0.75595 - 3.94751I$	$-8.05344 + 4.79157I$
$u = 0.524737$ $a = -1.48305$ $b = -1.22481$	-3.37867	-11.4520

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.14508 + 1.49712I$ $a = \quad 0.255664 + 0.886834I$ $b = -0.34618 - 1.41208I$	$5.10447 - 1.33905I$	$-8.55072 + 1.28965I$
$u = -0.14508 - 1.49712I$ $a = \quad 0.255664 - 0.886834I$ $b = -0.34618 + 1.41208I$	$5.10447 + 1.33905I$	$-8.55072 - 1.28965I$

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

(i) Arc colorings

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

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

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

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

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

$$a_5 = \begin{pmatrix} b+1 \\ b \end{pmatrix}$$

$$a_4 = \begin{pmatrix} b \\ b \end{pmatrix}$$

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

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

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

$$a_7 = \begin{pmatrix} -b+2 \\ 1 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -b+1 \\ 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -4b - 7$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

	Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u =$	1.00000		
$a =$	1.00000	$1.64493 + 2.02988I$	$-9.00000 - 3.46410I$
$b =$	$0.500000 + 0.866025I$		
$u =$	1.00000		
$a =$	1.00000	$1.64493 - 2.02988I$	$-9.00000 + 3.46410I$
$b =$	$0.500000 - 0.866025I$		

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^2-u+1)(u^{11}+30u^{10}+\cdots+46180u+6241)$ $\cdot(u^{12}-12u^{11}+\cdots-14u+1)$
c_2	$(u^2-u+1)(u^{11}+2u^{10}+\cdots+290u+79)$ $\cdot(u^{12}-6u^{10}+u^9+15u^8-4u^7-21u^6+5u^5+17u^4-3u^3-7u^2+1)$
c_3, c_4	$(u^2+u+1)(u^{11}-3u^{10}+\cdots-4u+1)(u^{12}+u^{11}+\cdots-2u^2-1)$
c_5	$(u^2-u+1)(u^{11}-6u^{10}+\cdots+59u+14)$ $\cdot(u^{12}-3u^{11}+5u^{10}-5u^9+5u^7-5u^6+2u^5+3u^4-3u^3-1)$
c_6	$(u^2+u+1)(u^{11}+16u^{10}+\cdots-1205u-239)$ $\cdot(u^{12}+3u^9-3u^8-2u^7+5u^6-5u^5+5u^3-5u^2+3u-1)$
c_7	$(u^2-u+1)(u^{11}+2u^{10}+\cdots+290u+79)$ $\cdot(u^{12}-6u^{10}-u^9+15u^8+4u^7-21u^6-5u^5+17u^4+3u^3-7u^2+1)$
c_8	$(u^2-u+1)(u^{11}-6u^{10}+\cdots+59u+14)$ $\cdot(u^{12}+3u^{11}+5u^{10}+5u^9-5u^7-5u^6-2u^5+3u^4+3u^3-1)$
c_9	$((u-1)^2)(u^{11}+u^{10}+\cdots+53u-43)$ $\cdot(u^{12}+2u^{10}-u^9-2u^8-u^7-3u^6+2u^5+2u^4+4u^3+u^2-1)$
c_{10}	$(u^2+u+1)(u^{11}+16u^{10}+\cdots-1205u-239)$ $\cdot(u^{12}-3u^9-3u^8+2u^7+5u^6+5u^5-5u^3-5u^2-3u-1)$
c_{11}	$(u^2+u+1)(u^{11}-3u^{10}+\cdots-4u+1)(u^{12}-u^{11}+\cdots-2u^2-1)$
c_{12}	$((u-1)^2)(u^{11}+2u^{10}+\cdots-9u-4)(u^{12}-4u^{11}+\cdots+14u+13)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^2+y+1)(y^{11}-270y^{10}+\cdots+1.32001\times 10^9 y-3.89501\times 10^7)$ $\cdot (y^{12}-12y^{11}+\cdots-30y+1)$
c_2, c_7	$(y^2+y+1)(y^{11}-30y^{10}+\cdots+46180y-6241)$ $\cdot (y^{12}-12y^{11}+\cdots-14y+1)$
c_3, c_4, c_{11}	$(y^2+y+1)(y^{11}+9y^{10}+\cdots+78y-1)(y^{12}+15y^{11}+\cdots+4y+1)$
c_5, c_8	$(y^2+y+1)(y^{11}-24y^{10}+\cdots+4069y-196)(y^{12}+y^{11}+\cdots-6y^2+1)$
c_6, c_{10}	$(y^2+y+1)(y^{11}-94y^{10}+\cdots+639425y-57121)$ $\cdot (y^{12}-6y^{10}+\cdots+y+1)$
c_9	$((y-1)^2)(y^{11}-51y^{10}+\cdots+24997y-1849)$ $\cdot (y^{12}+4y^{11}+\cdots-2y+1)$
c_{12}	$((y-1)^2)(y^{11}-28y^{10}+\cdots+289y-16)$ $\cdot (y^{12}-18y^{11}+\cdots+298y+169)$