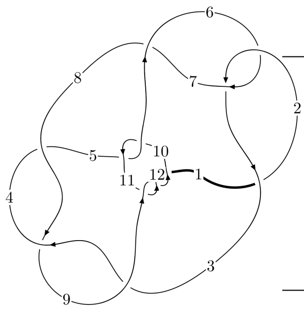
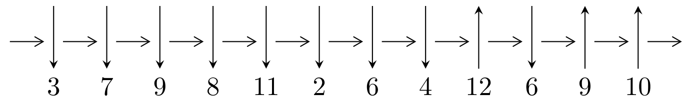
$12n_{0558}$ $(K12n_{0558})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u = \langle & 6.38928\times10^{32}u^{29} - 1.63982\times10^{33}u^{28} + \cdots + 2.11658\times10^{34}b + 1.61565\times10^{34}, \\
& -5.75591\times10^{32}u^{29} + 4.74067\times10^{32}u^{28} + \cdots + 6.34974\times10^{34}a + 7.64726\times10^{34}, \\
& u^{30} - 2u^{29} + \cdots - 36u - 36\rangle \\
I_2^u = \langle & u^4 - u^3 + 3u^2 + b - 3u,\ -u^4 + u^3 - 4u^2 + a + 3u - 3,\ u^5 - u^4 + 4u^3 - 3u^2 + 3u - 1\rangle \\
I_3^u = \langle & bau + b^2 + 2ba - 2bu + b + a - 2u,\ a^2 - au + 1,\ u^2 + 1\rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 43 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. $\boldsymbol{I^u_1 = \langle 6.39\times10^{32}u^{29} - 1.64\times10^{33}u^{28} + \cdots + 2.12\times10^{34}b + 1.62\times10^{34},\ -5.76\times10^{32}u^{29} + 4.74\times10^{32}u^{28} + \cdots + 6.35\times10^{34}a + 7.65\times10^{34},\ u^{30} - 2u^{29} + \cdots - 36u - 36\rangle}$

(i) Arc colorings

$$a_3 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_9 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0.00906479u^{29} - 0.00746591u^{28} + \cdots - 3.45875u - 1.20434\\-0.0301868u^{29} + 0.0774751u^{28} + \cdots + 0.497856u - 0.763331\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}0.00906479u^{29} - 0.00746591u^{28} + \cdots - 3.45875u - 1.20434\\-0.0230609u^{29} + 0.0603049u^{28} + \cdots - 0.212369u - 1.14722\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-0.0180236u^{29} + 0.0235211u^{28} + \cdots - 1.46858u + 0.229478\\-0.0262408u^{29} + 0.0578653u^{28} + \cdots + 0.566767u - 0.217670\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-0.00197135u^{29} - 0.0109705u^{28} + \cdots - 0.133902u + 1.62976\\-0.0140099u^{29} + 0.0220006u^{28} + \cdots + 1.02890u + 0.106895\end{pmatrix}$$
$$a_8 = \begin{pmatrix}u\\u^3 + u\end{pmatrix}$$
$$a_5 = \begin{pmatrix}u^2 + 1\\u^4 + 2u^2\end{pmatrix}$$
$$a_6 = \begin{pmatrix}0.0118634u^{29} - 0.0426200u^{28} + \cdots - 1.74552u + 0.488618\\0.00457667u^{29} + 0.00334632u^{28} + \cdots - 2.20933u - 1.11355\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-0.0141492u^{29} + 0.0501839u^{28} + \cdots + 1.57769u - 1.21616\\0.0122465u^{29} - 0.0288317u^{28} + \cdots + 0.716119u + 0.452662\end{pmatrix}$$
$$a_2 = \begin{pmatrix}0.0120385u^{29} - 0.0329711u^{28} + \cdots - 1.16280u + 1.52287\\-0.0140099u^{29} + 0.0220006u^{28} + \cdots + 1.02890u + 0.106895\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 0.239398u^{29} - 0.548218u^{28} + \cdots - 2.40002u - 3.00002$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_7	$u^{30} + 18u^{29} + \cdots - 108u + 81$
c_2, c_6	$u^{30} - 2u^{29} + \cdots + 24u - 9$
c_3, c_4, c_8	$u^{30} - 2u^{29} + \cdots - 36u - 36$
c_5, c_{10}	$u^{30} + u^{29} + \cdots - 192u + 32$
c_9, c_{11}, c_{12}	$u^{30} + 10u^{29} + \cdots - 6u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_7	$y^{30} - 6y^{29} + \cdots - 343440y + 6561$
c_2, c_6	$y^{30} - 18y^{29} + \cdots + 108y + 81$
c_3, c_4, c_8	$y^{30} + 10y^{29} + \cdots + 6120y + 1296$
c_5, c_{10}	$y^{30} - 21y^{29} + \cdots - 37376y + 1024$
c_9, c_{11}, c_{12}	$y^{30} - 14y^{29} + \cdots - 62y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.060949 + 0.993960I$ $a = 0.054675 - 1.026910I$ $b = 8.32351 - 0.35869I$	$3.35106 - 2.03998I$	$-64.0149 - 21.4668I$
$u = 0.060949 - 0.993960I$ $a = 0.054675 + 1.026910I$ $b = 8.32351 + 0.35869I$	$3.35106 + 2.03998I$	$-64.0149 + 21.4668I$
$u = -0.537847 + 0.922281I$ $a = -0.159880 + 0.394407I$ $b = 0.747743 + 0.961542I$	$1.90616 + 2.59959I$	$-5.37556 - 3.84761I$
$u = -0.537847 - 0.922281I$ $a = -0.159880 - 0.394407I$ $b = 0.747743 - 0.961542I$	$1.90616 - 2.59959I$	$-5.37556 + 3.84761I$
$u = 0.885353$ $a = 1.71518$ $b = 1.30868$	-0.666718	-7.65480
$u = -1.017350 + 0.486039I$ $a = -0.574022 - 1.162990I$ $b = -2.06665 - 1.74207I$	$-2.24459 + 3.47011I$	$-6.14707 - 3.44778I$
$u = -1.017350 - 0.486039I$ $a = -0.574022 + 1.162990I$ $b = -2.06665 + 1.74207I$	$-2.24459 - 3.47011I$	$-6.14707 + 3.44778I$
$u = -0.273950 + 0.781452I$ $a = 0.71806 + 1.92269I$ $b = 0.548292 - 0.259925I$	$9.49867 - 1.47383I$	$-5.91236 - 0.53100I$
$u = -0.273950 - 0.781452I$ $a = 0.71806 - 1.92269I$ $b = 0.548292 + 0.259925I$	$9.49867 + 1.47383I$	$-5.91236 + 0.53100I$
$u = -0.136443 + 1.288730I$ $a = -0.477581 - 0.116821I$ $b = 0.689136 + 1.080140I$	$1.36845 + 1.35871I$	$-6.00000 - 0.19188I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.136443 - 1.288730I$ $a = -0.477581 + 0.116821I$ $b = 0.689136 - 1.080140I$	$1.36845 - 1.35871I$	$-6.00000 + 0.19188I$
$u = 0.019571 + 0.697685I$ $a = 0.237922 - 0.197067I$ $b = -0.624234 + 1.163700I$	$1.57503 + 2.29578I$	$-6.91536 - 5.32282I$
$u = 0.019571 - 0.697685I$ $a = 0.237922 + 0.197067I$ $b = -0.624234 - 1.163700I$	$1.57503 - 2.29578I$	$-6.91536 + 5.32282I$
$u = -1.208520 + 0.721449I$ $a = 0.813857 - 0.414850I$ $b = -0.02930 - 2.67603I$	$-3.67883 + 0.34034I$	$-3.88135 - 0.22027I$
$u = -1.208520 - 0.721449I$ $a = 0.813857 + 0.414850I$ $b = -0.02930 + 2.67603I$	$-3.67883 - 0.34034I$	$-3.88135 + 0.22027I$
$u = 0.272145 + 0.413956I$ $a = 0.49020 - 1.91653I$ $b = 1.014450 - 0.329885I$	$1.70474 - 0.86259I$	$1.77057 + 2.23681I$
$u = 0.272145 - 0.413956I$ $a = 0.49020 + 1.91653I$ $b = 1.014450 + 0.329885I$	$1.70474 + 0.86259I$	$1.77057 - 2.23681I$
$u = 1.41053 + 0.55324I$ $a = -0.960628 - 0.426036I$ $b = -1.07262 - 3.12469I$	$-7.52040 + 5.61944I$	$-5.75678 - 3.05482I$
$u = 1.41053 - 0.55324I$ $a = -0.960628 + 0.426036I$ $b = -1.07262 + 3.12469I$	$-7.52040 - 5.61944I$	$-5.75678 + 3.05482I$
$u = -0.10183 + 1.58047I$ $a = 0.100802 + 0.775964I$ $b = 0.045827 - 1.200310I$	$13.09890 + 3.14293I$	$6.86746 - 0.28273I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.10183 - 1.58047I$ $a = 0.100802 - 0.775964I$ $b = 0.045827 + 1.200310I$	$13.09890 - 3.14293I$	$6.86746 + 0.28273I$
$u = -0.89832 + 1.30629I$ $a = 0.032327 + 0.946721I$ $b = 3.00551 + 0.63169I$	$-1.74378 + 7.39574I$	$-1.50771 - 3.90519I$
$u = -0.89832 - 1.30629I$ $a = 0.032327 - 0.946721I$ $b = 3.00551 - 0.63169I$	$-1.74378 - 7.39574I$	$-1.50771 + 3.90519I$
$u = 1.20555 + 1.04353I$ $a = -0.758006 - 0.545395I$ $b = 1.26924 - 3.19920I$	$-8.33843 - 5.76803I$	$-6.15654 + 3.24176I$
$u = 1.20555 - 1.04353I$ $a = -0.758006 + 0.545395I$ $b = 1.26924 + 3.19920I$	$-8.33843 + 5.76803I$	$-6.15654 - 3.24176I$
$u = -0.379780$ $a = 0.318553$ $b = -0.215645$	-0.719557	-14.3210
$u = 0.83269 + 1.39448I$ $a = -0.055727 + 1.016580I$ $b = -3.22456 + 0.35008I$	$-4.6721 - 13.5988I$	$-3.02274 + 6.83229I$
$u = 0.83269 - 1.39448I$ $a = -0.055727 - 1.016580I$ $b = -3.22456 - 0.35008I$	$-4.6721 + 13.5988I$	$-3.02274 - 6.83229I$
$u = 1.12003 + 1.24900I$ $a = 0.104473 + 0.946436I$ $b = -3.17286 + 1.59367I$	$-7.72406 - 2.77206I$	$-6.00000 + 1.57550I$
$u = 1.12003 - 1.24900I$ $a = 0.104473 - 0.946436I$ $b = -3.17286 - 1.59367I$	$-7.72406 + 2.77206I$	$-6.00000 - 1.57550I$

II. $I_2^u =$
$\langle u^4-u^3+3u^2+b-3u,\ -u^4+u^3-4u^2+a+3u-3,\ u^5-u^4+4u^3-3u^2+3u-1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4u^4+5u^3-12u^2+16u-8$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_3, c_4 c_7, c_8	$y^5 + 7y^4 + 16y^3 + 13y^2 + 3y - 1$
c_2, c_6	$y^5 - y^4 + 4y^3 - 3y^2 + 3y - 1$
c_5, c_{10}	y^5
c_9, c_{11}, c_{12}	$(y-1)^5$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.233677 + 0.885557I$ $a = 0.278580 - 1.055720I$ $b = 1.99181 + 1.46959I$	$3.46474 - 2.21397I$	$0.36497 + 8.87119I$
$u = 0.233677 - 0.885557I$ $a = 0.278580 + 1.055720I$ $b = 1.99181 - 1.46959I$	$3.46474 + 2.21397I$	$0.36497 - 8.87119I$
$u = 0.416284$ $a = 2.40221$ $b = 0.771083$	0.762751	−3.17840
$u = 0.05818 + 1.69128I$ $a = 0.020316 - 0.590570I$ $b = 0.122644 + 0.787371I$	$12.60320 - 3.33174I$	$-7.77577 + 5.09400I$
$u = 0.05818 - 1.69128I$ $a = 0.020316 + 0.590570I$ $b = 0.122644 - 0.787371I$	$12.60320 + 3.33174I$	$-7.77577 - 5.09400I$

III. $\boldsymbol{I_3^u = \langle bau + b^2 + 2ba - 2bu + b + a - 2u,\ a^2 - au + 1,\ u^2 + 1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -4bau + 4u$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.000000I$ $a = -0.618034I$ $b = -0.809017 + 0.216775I$	$2.63189 - 2.02988I$	$2.00000 + 3.46410I$
$u = 1.000000I$ $a = -0.618034I$ $b = -0.80902 + 3.01929I$	$2.63189 + 2.02988I$	$2.00000 - 3.46410I$
$u = 1.000000I$ $a = 1.61803I$ $b = 0.309017 - 1.153270I$	$10.52760 + 2.02988I$	$2.00000 - 3.46410I$
$u = 1.000000I$ $a = 1.61803I$ $b = 0.309017 - 0.082801I$	$10.52760 - 2.02988I$	$2.00000 + 3.46410I$
$u = -1.000000I$ $a = 0.618034I$ $b = -0.809017 - 0.216775I$	$2.63189 + 2.02988I$	$2.00000 - 3.46410I$
$u = -1.000000I$ $a = 0.618034I$ $b = -0.80902 - 3.01929I$	$2.63189 - 2.02988I$	$2.00000 + 3.46410I$
$u = -1.000000I$ $a = -1.61803I$ $b = 0.309017 + 1.153270I$	$10.52760 - 2.02988I$	$2.00000 + 3.46410I$
$u = -1.000000I$ $a = -1.61803I$ $b = 0.309017 + 0.082801I$	$10.52760 + 2.02988I$	$2.00000 - 3.46410I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^2-u+1)^4(u^5-u^4+4u^3-3u^2+3u-1)$ $\cdot(u^{30}+18u^{29}+\cdots-108u+81)$
c_2	$((u^4-u^2+1)^2)(u^5-u^4+u^2+u-1)(u^{30}-2u^{29}+\cdots+24u-9)$
c_3, c_4	$((u^2+1)^4)(u^5-u^4+\cdots+3u-1)(u^{30}-2u^{29}+\cdots-36u-36)$
c_5, c_{10}	$u^5(u^4+3u^2+1)^2(u^{30}+u^{29}+\cdots-192u+32)$
c_6	$((u^4-u^2+1)^2)(u^5+u^4-u^2+u+1)(u^{30}-2u^{29}+\cdots+24u-9)$
c_7	$(u^2+u+1)^4(u^5+u^4+4u^3+3u^2+3u+1)$ $\cdot(u^{30}+18u^{29}+\cdots-108u+81)$
c_8	$((u^2+1)^4)(u^5+u^4+\cdots+3u+1)(u^{30}-2u^{29}+\cdots-36u-36)$
c_9	$((u+1)^5)(u^2-u-1)^4(u^{30}+10u^{29}+\cdots-6u-1)$
c_{11}, c_{12}	$((u-1)^5)(u^2+u-1)^4(u^{30}+10u^{29}+\cdots-6u-1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_7	$(y^2+y+1)^4(y^5+7y^4+16y^3+13y^2+3y-1)$ $\cdot(y^{30}-6y^{29}+\cdots-343440y+6561)$
c_2, c_6	$(y^2-y+1)^4(y^5-y^4+4y^3-3y^2+3y-1)$ $\cdot(y^{30}-18y^{29}+\cdots+108y+81)$
c_3, c_4, c_8	$(y+1)^8(y^5+7y^4+16y^3+13y^2+3y-1)$ $\cdot(y^{30}+10y^{29}+\cdots+6120y+1296)$
c_5, c_{10}	$y^5(y^2+3y+1)^4(y^{30}-21y^{29}+\cdots-37376y+1024)$
c_9, c_{11}, c_{12}	$((y-1)^5)(y^2-3y+1)^4(y^{30}-14y^{29}+\cdots-62y+1)$