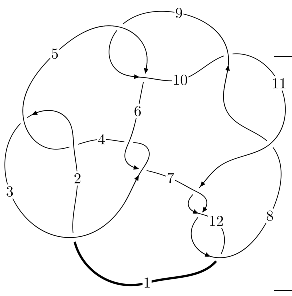
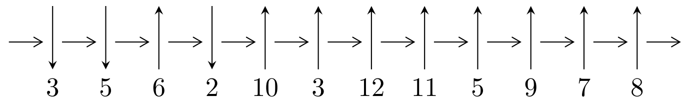
$12n_{0120}$ $(K12n_{0120})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle 15121u^{16} - 24215u^{15} + \cdots + 18155b - 26228,\ 15121u^{16} - 24215u^{15} + \cdots + 18155a - 26228,$$
$$u^{17} - 2u^{16} + 2u^{15} + 7u^{13} - 14u^{12} + 14u^{11} - 2u^{10} + 7u^9 - 14u^8 + 14u^7 - 12u^6 - 2u^2 - u + 1\rangle$$
$$I_2^u = \langle -u^7 + u^6 + u^5 - 2u^4 - u^3 + 2u^2 + b + u - 2,\ -u^7 + u^6 + u^5 - 2u^4 - u^3 + 2u^2 + a - 2,$$
$$u^8 - u^7 - u^6 + 2u^5 + u^4 - 2u^3 + 2u - 1\rangle$$

* 2 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. $\boldsymbol{I^u_1 = \langle 15121u^{16} - 24215u^{15} + \cdots + 18155b - 26228,\ 15121u^{16} - 24215u^{15} + \cdots + 18155a - 26228,\ u^{17} - 2u^{16} + \cdots - u + 1\rangle}$

(i) Arc colorings

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

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

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

$$a_3 = \begin{pmatrix} -0.832884u^{16} + 1.33379u^{15} + \cdots + 1.24985u + 1.44467 \\ -0.832884u^{16} + 1.33379u^{15} + \cdots + 2.24985u + 1.44467 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} 0.102561u^{16} + 0.104654u^{15} + \cdots - 0.0345359u - 0.615037 \\ 0.0863674u^{16} + 0.0881300u^{15} + \cdots - 0.0290829u - 0.623189 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -0.832884u^{16} + 1.33379u^{15} + \cdots + 1.24985u + 1.44467 \\ -0.830185u^{16} + 1.33655u^{15} + \cdots + 1.74894u + 1.11270 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 0.368438u^{16} - 0.644451u^{15} + \cdots + 0.212669u - 0.317929 \\ 0.471000u^{16} - 0.539796u^{15} + \cdots + 0.178133u - 0.932966 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -0.816690u^{16} + 1.35032u^{15} + \cdots + 1.24440u + 1.45282 \\ -0.719526u^{16} + 1.44946u^{15} + \cdots + 2.21168u + 1.50174 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^4 - u^2 + 1 \\ u^4 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -0.167337u^{16} - 0.170752u^{15} + \cdots + 0.0563481u + 0.582429 \\ -0.140347u^{16} - 0.143211u^{15} + \cdots + 0.0472597u - 0.737318 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -\frac{116556}{18155}u^{16} + \frac{32086}{3631}u^{15} + \cdots + \frac{186341}{18155}u + \frac{375193}{18155}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{17} + 37u^{16} + \cdots + 129u + 1$
c_2, c_4	$u^{17} - 9u^{16} + \cdots - 9u + 1$
c_3, c_6	$u^{17} + 3u^{16} + \cdots + 1664u - 256$
c_5, c_9	$u^{17} + 2u^{16} + \cdots - u - 1$
c_7, c_{11}, c_{12}	$u^{17} + 2u^{16} + \cdots - u + 1$
c_8, c_{10}	$u^{17} + 18u^{15} + \cdots + 5u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{17} - 169y^{16} + \cdots + 16813y - 1$
c_2, c_4	$y^{17} - 37y^{16} + \cdots + 129y - 1$
c_3, c_6	$y^{17} + 51y^{16} + \cdots + 835584y - 65536$
c_5, c_9	$y^{17} + 18y^{15} + \cdots + 5y - 1$
c_7, c_{11}, c_{12}	$y^{17} - 12y^{16} + \cdots + 5y - 1$
c_8, c_{10}	$y^{17} + 36y^{16} + \cdots + 17y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.01926$ $a = -0.421975$ $b = 0.597288$	5.87185	17.0960
$u = -0.814269 + 0.697849I$ $a = 0.772298 - 0.496323I$ $b = -0.041970 + 0.201526I$	$1.96725 - 4.89234I$	$8.35716 + 5.36349I$
$u = -0.814269 - 0.697849I$ $a = 0.772298 + 0.496323I$ $b = -0.041970 - 0.201526I$	$1.96725 + 4.89234I$	$8.35716 - 5.36349I$
$u = 0.151212 + 0.886118I$ $a = -0.24895 - 2.10381I$ $b = -0.097735 - 1.217690I$	$-2.98302 + 1.89910I$	$0.81624 - 3.73789I$
$u = 0.151212 - 0.886118I$ $a = -0.24895 + 2.10381I$ $b = -0.097735 + 1.217690I$	$-2.98302 - 1.89910I$	$0.81624 + 3.73789I$
$u = 0.524511 + 0.603470I$ $a = -0.232214 - 0.919977I$ $b = 0.292297 - 0.316506I$	$-1.41487 + 1.50880I$	$1.51941 - 3.79939I$
$u = 0.524511 - 0.603470I$ $a = -0.232214 + 0.919977I$ $b = 0.292297 + 0.316506I$	$-1.41487 - 1.50880I$	$1.51941 + 3.79939I$
$u = -0.413009 + 0.524274I$ $a = -0.410879 + 0.002963I$ $b = -0.823888 + 0.527237I$	$1.40326 + 0.77610I$	$7.08751 + 0.48404I$
$u = -0.413009 - 0.524274I$ $a = -0.410879 - 0.002963I$ $b = -0.823888 - 0.527237I$	$1.40326 - 0.77610I$	$7.08751 - 0.48404I$
$u = -0.568174$ $a = 0.153918$ $b = -0.414256$	0.739304	14.0850

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.471408$ $a = 2.32178$ $b = 2.79318$	-0.391449	30.6130
$u = 1.08781 + 1.09421I$ $a = -0.81831 + 1.23483I$ $b = 0.26950 + 2.32904I$	$-17.0915 + 9.8759I$	$4.86349 - 4.59062I$
$u = 1.08781 - 1.09421I$ $a = -0.81831 - 1.23483I$ $b = 0.26950 - 2.32904I$	$-17.0915 - 9.8759I$	$4.86349 + 4.59062I$
$u = -1.09696 + 1.09725I$ $a = 0.98973 + 1.18652I$ $b = -0.10723 + 2.28377I$	$18.1033 - 4.0499I$	$2.18495 + 1.91746I$
$u = -1.09696 - 1.09725I$ $a = 0.98973 - 1.18652I$ $b = -0.10723 - 2.28377I$	$18.1033 + 4.0499I$	$2.18495 - 1.91746I$
$u = 1.09946 + 1.09842I$ $a = -1.07854 + 1.01904I$ $b = 0.02092 + 2.11746I$	$-17.0762 - 1.7937I$	$4.77435 + 0.71535I$
$u = 1.09946 - 1.09842I$ $a = -1.07854 - 1.01904I$ $b = 0.02092 - 2.11746I$	$-17.0762 + 1.7937I$	$4.77435 - 0.71535I$

II. $\boldsymbol{I_2^u = \langle -u^7 + u^6 + u^5 - 2u^4 - u^3 + 2u^2 + b + u - 2,\ -u^7 + u^6 + u^5 - 2u^4 - u^3 + 2u^2 + a - 2,\ u^8 - u^7 - u^6 + 2u^5 + u^4 - 2u^3 + 2u - 1\rangle}$

(i) Arc colorings

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

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

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

$$a_3 = \begin{pmatrix} u^7 - u^6 - u^5 + 2u^4 + u^3 - 2u^2 + 2 \\ u^7 - u^6 - u^5 + 2u^4 + u^3 - 2u^2 - u + 2 \end{pmatrix}$$

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

$$a_7 = \begin{pmatrix} u \\ -u^3 + u \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} u^7 - u^6 - u^5 + 2u^4 + u^3 - 2u^2 + 2 \\ u^7 - u^6 - u^5 + 2u^4 + u^3 - 2u^2 - 2u + 2 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} u^7 - u^6 - u^5 + 2u^4 + u^3 - 2u^2 + 2 \\ u^7 - u^6 - u^5 + 2u^4 + u^3 - 2u^2 - u + 2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} u^4 - u^2 + 1 \\ u^4 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} -u^6 + u^4 - 2u^2 + 1 \\ u^7 - u^6 - 2u^5 + u^4 + 2u^3 - 2u^2 - 2u + 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -2u^7 + 2u^6 - 4u^4 - 3u^3 + u^2 + 1$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u-1)^8$
c_3, c_6	u^8
c_4	$(u+1)^8$
c_5	$u^8+u^7-u^6-2u^5+u^4+2u^3-2u-1$
c_7	$u^8-u^7-3u^6+2u^5+3u^4-2u-1$
c_8	$u^8+3u^7+7u^6+10u^5+11u^4+10u^3+6u^2+4u+1$
c_9	$u^8-u^7-u^6+2u^5+u^4-2u^3+2u-1$
c_{10}	$u^8-3u^7+7u^6-10u^5+11u^4-10u^3+6u^2-4u+1$
c_{11}, c_{12}	$u^8+u^7-3u^6-2u^5+3u^4+2u-1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^8$
c_3, c_6	y^8
c_5, c_9	$y^8 - 3y^7 + 7y^6 - 10y^5 + 11y^4 - 10y^3 + 6y^2 - 4y + 1$
c_7, c_{11}, c_{12}	$y^8 - 7y^7 + 19y^6 - 22y^5 + 3y^4 + 14y^3 - 6y^2 - 4y + 1$
c_8, c_{10}	$y^8 + 5y^7 + 11y^6 + 6y^5 - 17y^4 - 34y^3 - 22y^2 - 4y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.570868 + 0.730671I$ $a = 0.663977 - 0.849844I$ $b = 0.09311 - 1.58052I$	$-0.604279 - 1.131230I$	$5.26238 + 0.22273I$
$u = 0.570868 - 0.730671I$ $a = 0.663977 + 0.849844I$ $b = 0.09311 + 1.58052I$	$-0.604279 + 1.131230I$	$5.26238 - 0.22273I$
$u = -0.855237 + 0.665892I$ $a = -0.727959 - 0.566792I$ $b = 0.127279 - 1.232690I$	$-3.80435 - 2.57849I$	$2.12884 + 3.87967I$
$u = -0.855237 - 0.665892I$ $a = -0.727959 + 0.566792I$ $b = 0.127279 + 1.232690I$	$-3.80435 + 2.57849I$	$2.12884 - 3.87967I$
$u = -1.09818$ $a = -0.910598$ $b = 0.187581$	4.85780	7.72210
$u = 1.031810 + 0.655470I$ $a = 0.690511 - 0.438656I$ $b = -0.341297 - 1.094130I$	$0.73474 + 6.44354I$	$7.14098 - 6.66742I$
$u = 1.031810 - 0.655470I$ $a = 0.690511 + 0.438656I$ $b = -0.341297 + 1.094130I$	$0.73474 - 6.44354I$	$7.14098 + 6.66742I$
$u = 0.603304$ $a = 1.65754$ $b = 1.05424$	-0.799899	0.213560

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^8)(u^{17}+37u^{16}+\cdots+129u+1)$
c_2	$((u-1)^8)(u^{17}-9u^{16}+\cdots-9u+1)$
c_3, c_6	$u^8(u^{17}+3u^{16}+\cdots+1664u-256)$
c_4	$((u+1)^8)(u^{17}-9u^{16}+\cdots-9u+1)$
c_5	$(u^8+u^7+\cdots-2u-1)(u^{17}+2u^{16}+\cdots-u-1)$
c_7	$(u^8-u^7-3u^6+2u^5+3u^4-2u-1)(u^{17}+2u^{16}+\cdots-u+1)$
c_8	$(u^8+3u^7+7u^6+10u^5+11u^4+10u^3+6u^2+4u+1)$ $\cdot(u^{17}+18u^{15}+\cdots+5u-1)$
c_9	$(u^8-u^7+\cdots+2u-1)(u^{17}+2u^{16}+\cdots-u-1)$
c_{10}	$(u^8-3u^7+7u^6-10u^5+11u^4-10u^3+6u^2-4u+1)$ $\cdot(u^{17}+18u^{15}+\cdots+5u-1)$
c_{11}, c_{12}	$(u^8+u^7-3u^6-2u^5+3u^4+2u-1)(u^{17}+2u^{16}+\cdots-u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^8)(y^{17} - 169y^{16} + \cdots + 16813y - 1)$
c_2, c_4	$((y-1)^8)(y^{17} - 37y^{16} + \cdots + 129y - 1)$
c_3, c_6	$y^8(y^{17} + 51y^{16} + \cdots + 835584y - 65536)$
c_5, c_9	$(y^8 - 3y^7 + 7y^6 - 10y^5 + 11y^4 - 10y^3 + 6y^2 - 4y + 1)$ $\cdot (y^{17} + 18y^{15} + \cdots + 5y - 1)$
c_7, c_{11}, c_{12}	$(y^8 - 7y^7 + 19y^6 - 22y^5 + 3y^4 + 14y^3 - 6y^2 - 4y + 1)$ $\cdot (y^{17} - 12y^{16} + \cdots + 5y - 1)$
c_8, c_{10}	$(y^8 + 5y^7 + 11y^6 + 6y^5 - 17y^4 - 34y^3 - 22y^2 - 4y + 1)$ $\cdot (y^{17} + 36y^{16} + \cdots + 17y - 1)$