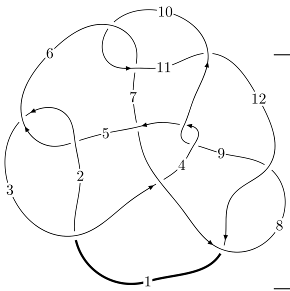
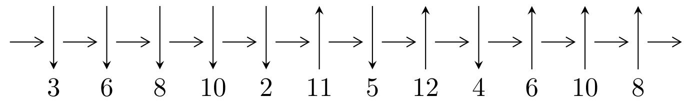
$12n_{0371}$ $(K12n_{0371})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned} I_1^u = \langle & 2u^{13} - 7u^{12} + 11u^{11} - 7u^{10} + 10u^9 - 33u^8 + 54u^7 - 34u^6 + u^5 + 5u^4 + u^3 + 4u^2 + b - 5u + 1, \\ & 2u^{13} - 7u^{12} + 11u^{11} - 7u^{10} + 10u^9 - 33u^8 + 54u^7 - 34u^6 + u^5 + 5u^4 + u^3 + 4u^2 + a - 6u + 1, \\ & u^{15} - 4u^{14} + 7u^{13} - 5u^{12} + 4u^{11} - 16u^{10} + 33u^9 - 25u^8 - 4u^7 + 17u^6 - 6u^5 - u^4 - 2u^3 + 2u^2 + u - 1 \rangle \\ I_2^u = \langle & u^9 + 3u^8 + 4u^7 - 4u^5 - 4u^4 + b + u,\ u^9 + 3u^8 + 4u^7 - 4u^5 - 4u^4 + a,\ u^{10} + 3u^9 + 4u^8 - 4u^6 - 4u^5 + u^3 + \end{aligned}$$

* 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.

$\boldsymbol{I_1^u = \langle 2u^{13}-7u^{12}+\cdots+b+1,\ 2u^{13}-7u^{12}+\cdots+a+1,\ u^{15}-4u^{14}+\cdots+u-1\rangle}$

(i) Arc colorings

$$a_2 = \begin{pmatrix}1\\0\end{pmatrix}$$

$$a_6 = \begin{pmatrix}0\\u\end{pmatrix}$$

$$a_3 = \begin{pmatrix}1\\u^2\end{pmatrix}$$

$$a_{11} = \begin{pmatrix}-2u^{13}+7u^{12}+\cdots+6u-1\\-2u^{13}+7u^{12}+\cdots+5u-1\end{pmatrix}$$

$$a_7 = \begin{pmatrix}-3u^{13}+11u^{12}+\cdots+7u-2\\u^{14}-6u^{13}+\cdots-6u^2+6u\end{pmatrix}$$

$$a_1 = \begin{pmatrix}-u^2+1\\-u^4\end{pmatrix}$$

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

$$a_8 = \begin{pmatrix}-3u^{13}+11u^{12}+\cdots+7u-3\\u^{14}-6u^{13}+\cdots+6u-1\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}-2u^{13}+7u^{12}+\cdots+6u-1\\-u^{14}+u^{13}+\cdots+7u-3\end{pmatrix}$$

$$a_4 = \begin{pmatrix}u^{11}-2u^{10}+u^9+5u^7-10u^6+5u^5+u^3-u^2+1\\u^{13}-2u^{12}+2u^{11}-u^{10}+5u^9-10u^8+10u^7-5u^6+u^5-u^4+u^3+u^2\end{pmatrix}$$

$$a_{12} = \begin{pmatrix}-u^{12}+3u^{11}+\cdots-2u^2+1\\-u^{14}+3u^{13}+\cdots-3u^4+u^3\end{pmatrix}$$

$$a_9 = \begin{pmatrix}u^{13}-5u^{12}+\cdots-6u+3\\u^{14}-2u^{13}+\cdots-7u+5\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= 4u^{13}-14u^{12}+19u^{11}-7u^{10}+13u^9-68u^8+98u^7-35u^6-33u^5+23u^3+3u^2-14u-6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{15} + 2u^{14} + \cdots + 5u + 1$
c_2, c_5	$u^{15} + 4u^{14} + \cdots + u + 1$
c_3	$u^{15} - 10u^{13} + \cdots + 4u + 1$
c_4, c_7, c_9	$u^{15} - u^{14} + \cdots + 2u + 1$
c_6, c_{10}	$u^{15} + 14u^{14} + \cdots + 240u + 32$
c_8, c_{12}	$u^{15} + 4u^{14} + \cdots + 9u + 1$
c_{11}	$u^{15} - 10u^{14} + \cdots + 12032u - 1024$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{15} + 30y^{14} + \cdots + 5y - 1$
c_2, c_5	$y^{15} - 2y^{14} + \cdots + 5y - 1$
c_3	$y^{15} - 20y^{14} + \cdots - 2y - 1$
c_4, c_7, c_9	$y^{15} - 35y^{14} + \cdots - 6y - 1$
c_6, c_{10}	$y^{15} - 10y^{14} + \cdots + 12032y - 1024$
c_8, c_{12}	$y^{15} + 24y^{14} + \cdots + 89y - 1$
c_{11}	$y^{15} + 78y^{14} + \cdots + 66256896y - 1048576$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.712549 + 0.633880I$ $a = 0.274451 - 1.191860I$ $b = -0.43810 - 1.82574I$	$-1.05212 - 4.72304I$	$-2.71866 + 7.35913I$
$u = 0.712549 - 0.633880I$ $a = 0.274451 + 1.191860I$ $b = -0.43810 + 1.82574I$	$-1.05212 + 4.72304I$	$-2.71866 - 7.35913I$
$u = 0.815797 + 0.485623I$ $a = 1.042200 + 0.113566I$ $b = 0.226400 - 0.372057I$	$-1.57751 + 0.34385I$	$-3.36524 - 0.94481I$
$u = 0.815797 - 0.485623I$ $a = 1.042200 - 0.113566I$ $b = 0.226400 + 0.372057I$	$-1.57751 - 0.34385I$	$-3.36524 + 0.94481I$
$u = 0.766118$ $a = 0.453886$ $b = -0.312232$	-1.00577	-12.0370
$u = -0.635896 + 0.026087I$ $a = -1.32826 - 1.25555I$ $b = -0.69236 - 1.28163I$	$-3.88717 + 2.88458I$	$-6.82119 + 2.09374I$
$u = -0.635896 - 0.026087I$ $a = -1.32826 + 1.25555I$ $b = -0.69236 + 1.28163I$	$-3.88717 - 2.88458I$	$-6.82119 - 2.09374I$
$u = -0.289639 + 0.547664I$ $a = -0.006426 + 1.347820I$ $b = 0.283213 + 0.800152I$	$1.30871 + 0.90771I$	$3.11296 - 2.32958I$
$u = -0.289639 - 0.547664I$ $a = -0.006426 - 1.347820I$ $b = 0.283213 - 0.800152I$	$1.30871 - 0.90771I$	$3.11296 + 2.32958I$
$u = 1.07267 + 0.99560I$ $a = 0.05227 - 1.45647I$ $b = -1.02040 - 2.45206I$	$-11.1785 - 9.6087I$	$-3.50462 + 4.00725I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.07267 - 0.99560I$ $a = 0.05227 + 1.45647I$ $b = -1.02040 + 2.45206I$	$-11.1785 + 9.6087I$	$-3.50462 - 4.00725I$
$u = 0.99469 + 1.08421I$ $a = 1.49910 - 0.14023I$ $b = 0.504408 - 1.224440I$	$-10.84830 + 1.98719I$	$-3.37763 - 0.18602I$
$u = 0.99469 - 1.08421I$ $a = 1.49910 + 0.14023I$ $b = 0.504408 + 1.224440I$	$-10.84830 - 1.98719I$	$-3.37763 + 0.18602I$
$u = -1.05323 + 1.04849I$ $a = -0.760279 - 0.943123I$ $b = 0.29295 - 1.99161I$	$10.46600 + 3.87226I$	$-4.30716 - 1.63349I$
$u = -1.05323 - 1.04849I$ $a = -0.760279 + 0.943123I$ $b = 0.29295 + 1.99161I$	$10.46600 - 3.87226I$	$-4.30716 + 1.63349I$

II. $I_2^u = \langle u^9+3u^8+4u^7-4u^5-4u^4+b+u,\ u^9+3u^8+4u^7-4u^5-4u^4+a,\ u^{10}+3u^9+4u^8-4u^6-4u^5+u^3+u^2-1\rangle$

(i) Arc colorings

$$a_2 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_6 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}1\\u^2\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-u^9-3u^8-4u^7+4u^5+4u^4\\-u^9-3u^8-4u^7+4u^5+4u^4-u\end{pmatrix}$$
$$a_7 = \begin{pmatrix}u^9+3u^8+4u^7-3u^5-2u^4+u^3-u^2-u\\u^9+3u^8+4u^7-3u^5-3u^4-u^2+u\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-u^2+1\\-u^4\end{pmatrix}$$
$$a_5 = \begin{pmatrix}u\\u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}u^9+3u^8+4u^7+u^6-2u^5-2u^4-u^3-u^2-u\\u^9+3u^8+4u^7+u^6-2u^5-3u^4-2u^3-u^2+u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-u^9-3u^8-4u^7+4u^5+4u^4\\-u^9-3u^8-4u^7+4u^5+5u^4+u^3-2u\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-u^7-2u^6-u^5+3u^4+3u^3-u\\-u^9-2u^8-2u^7+2u^6+3u^5+3u^4-u^3-u\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}-u^8-3u^7-3u^6+2u^5+6u^4+3u^3-2u^2-2u\\u^6+2u^5+u^4-u^3-u^2-u-1\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-u^8-3u^7-3u^6+2u^5+5u^4+u^3-2u^2+1\\-u^8-2u^7-2u^6+u^5+2u^4+2u^3+u^2-1\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= u^9-6u^7-13u^6-3u^5+11u^4+16u^3+5u^2+u-8$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{10} + 15y^9 + \cdots - 2y + 1$
c_2, c_5	$y^{10} - y^9 + 8y^8 - 8y^7 + 12y^6 - 10y^5 - 8y^4 + 7y^3 + y^2 - 2y + 1$
c_3	$y^{10} + 5y^9 - y^8 - 42y^7 - 31y^6 + 63y^5 + 65y^4 - 30y^3 - 53y^2 - 15y + 1$
c_4, c_7, c_9	$y^{10} + 2y^9 + y^8 + 11y^7 + 12y^6 - 79y^5 - 70y^4 - 19y^3 - 41y^2 - 27y + 1$
c_6, c_{10}	$y^{10} - 10y^9 + \cdots - 13y + 1$
c_8, c_{12}	$y^{10} - 3y^9 - 5y^8 + 17y^7 + 2y^6 + 13y^5 - 8y^4 - 97y^3 + 121y^2 - 26y + 1$
c_{11}	$y^{10} - 10y^9 + \cdots - 41y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.957717$ $a = 0.830787$ $b = -0.126929$	-0.427947	4.64810
$u = -0.857224$ $a = 1.04417$ $b = 1.90139$	-4.84848	-11.3010
$u = -0.138927 + 0.799162I$ $a = -0.54714 + 1.79172I$ $b = -0.408212 + 0.992555I$	$-1.32406 + 2.21202I$	$-2.09245 - 1.71917I$
$u = -0.138927 - 0.799162I$ $a = -0.54714 - 1.79172I$ $b = -0.408212 - 0.992555I$	$-1.32406 - 2.21202I$	$-2.09245 + 1.71917I$
$u = -0.931721 + 0.885936I$ $a = -0.284841 - 0.228994I$ $b = 0.646880 - 1.114930I$	$6.28538 + 3.27846I$	$-3.95412 - 2.52602I$
$u = -0.931721 - 0.885936I$ $a = -0.284841 + 0.228994I$ $b = 0.646880 + 1.114930I$	$6.28538 - 3.27846I$	$-3.95412 + 2.52602I$
$u = 0.602982 + 0.323142I$ $a = -0.42625 + 1.40330I$ $b = -1.02923 + 1.08016I$	$-3.73438 - 3.52182I$	$-4.49714 + 9.15215I$
$u = 0.602982 - 0.323142I$ $a = -0.42625 - 1.40330I$ $b = -1.02923 - 1.08016I$	$-3.73438 + 3.52182I$	$-4.49714 - 9.15215I$
$u = -1.08258 + 1.10501I$ $a = -0.679245 - 0.825748I$ $b = 0.40334 - 1.93075I$	$11.28090 + 4.04196I$	$5.87002 - 3.50031I$
$u = -1.08258 - 1.10501I$ $a = -0.679245 + 0.825748I$ $b = 0.40334 + 1.93075I$	$11.28090 - 4.04196I$	$5.87002 + 3.50031I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^{10} - u^9 + 8u^8 - 8u^7 + 12u^6 - 10u^5 - 8u^4 + 7u^3 + u^2 - 2u + 1)$ $\cdot (u^{15} + 2u^{14} + \cdots + 5u + 1)$
c_2	$(u^{10} + 3u^9 + \cdots + u^2 - 1)(u^{15} + 4u^{14} + \cdots + u + 1)$
c_3	$(u^{10} - u^9 + 3u^8 - 5u^6 + 5u^5 - 11u^4 + 10u^3 - 5u^2 + 5u - 1)$ $\cdot (u^{15} - 10u^{13} + \cdots + 4u + 1)$
c_4, c_7	$(u^{10} + u^8 + 3u^7 + 5u^5 + 10u^4 + 13u^3 + 11u^2 + 7u + 1)$ $\cdot (u^{15} - u^{14} + \cdots + 2u + 1)$
c_5	$(u^{10} - 3u^9 + \cdots + u^2 - 1)(u^{15} + 4u^{14} + \cdots + u + 1)$
c_6	$(u^{10} - 5u^8 + 3u^7 + 10u^6 - 8u^5 - 6u^4 + 8u^3 + 2u^2 - 3u - 1)$ $\cdot (u^{15} + 14u^{14} + \cdots + 240u + 32)$
c_8	$(u^{10} + 3u^9 + 3u^8 + u^7 - 4u^6 - 9u^5 - 6u^4 + 3u^3 + 11u^2 + 2u - 1)$ $\cdot (u^{15} + 4u^{14} + \cdots + 9u + 1)$
c_9	$(u^{10} + u^8 - 3u^7 - 5u^5 + 10u^4 - 13u^3 + 11u^2 - 7u + 1)$ $\cdot (u^{15} - u^{14} + \cdots + 2u + 1)$
c_{10}	$(u^{10} - 5u^8 - 3u^7 + 10u^6 + 8u^5 - 6u^4 - 8u^3 + 2u^2 + 3u - 1)$ $\cdot (u^{15} + 14u^{14} + \cdots + 240u + 32)$
c_{11}	$(u^{10} - 10u^9 + \cdots - 13u + 1)(u^{15} - 10u^{14} + \cdots + 12032u - 1024)$
c_{12}	$(u^{10} - 3u^9 + 3u^8 - u^7 - 4u^6 + 9u^5 - 6u^4 - 3u^3 + 11u^2 - 2u - 1)$ $\cdot (u^{15} + 4u^{14} + \cdots + 9u + 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^{10}+15y^9+\cdots-2y+1)(y^{15}+30y^{14}+\cdots+5y-1)$
c_2, c_5	$(y^{10}-y^9+8y^8-8y^7+12y^6-10y^5-8y^4+7y^3+y^2-2y+1)$ $\cdot\,(y^{15}-2y^{14}+\cdots+5y-1)$
c_3	$(y^{10}+5y^9-y^8-42y^7-31y^6+63y^5+65y^4-30y^3-53y^2-15y+1)$ $\cdot\,(y^{15}-20y^{14}+\cdots-2y-1)$
c_4, c_7, c_9	$(y^{10}+2y^9+y^8+11y^7+12y^6-79y^5-70y^4-19y^3-41y^2-27y+1)$ $\cdot\,(y^{15}-35y^{14}+\cdots-6y-1)$
c_6, c_{10}	$(y^{10}-10y^9+\cdots-13y+1)(y^{15}-10y^{14}+\cdots+12032y-1024)$
c_8, c_{12}	$(y^{10}-3y^9-5y^8+17y^7+2y^6+13y^5-8y^4-97y^3+121y^2-26y+1)$ $\cdot\,(y^{15}+24y^{14}+\cdots+89y-1)$
c_{11}	$(y^{10}-10y^9+\cdots-41y+1)$ $\cdot\,(y^{15}+78y^{14}+\cdots+66256896y-1048576)$