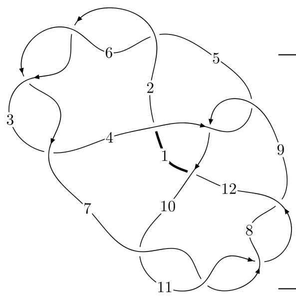
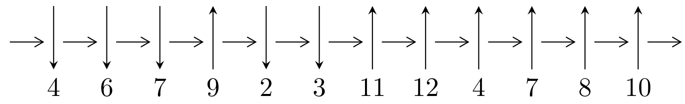
$12n_{0721}$ $(K12n_{0721})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^{15} - 2u^{14} + 7u^{13} + 12u^{12} - 22u^{11} - 21u^{10} + 47u^9 - 66u^7 + 33u^6 + 38u^5 - 32u^4 + 4u^3 + 11u^2 + 2b - u,$$
$$5u^{15} + 10u^{14} + \cdots + 2a - 4,\ u^{16} + 3u^{15} + \cdots - 6u^2 - 1\rangle$$
$$I_2^u = \langle b + u - 1,\ a - u + 1,\ u^2 - u - 1\rangle$$
$$I_3^u = \langle b - u,\ a + u,\ u^2 - u - 1\rangle$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 20 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. $I^u_1 =$
$\langle -u^{15}-2u^{14}+\cdots+2b-u,\ 5u^{15}+10u^{14}+\cdots+2a-4,\ u^{16}+3u^{15}+\cdots-6u^2-1\rangle$

(i) Arc colorings

$$a_7 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-\frac{5}{2}u^{15}-5u^{14}+\cdots+\frac{7}{2}u+2\\\frac{1}{2}u^{15}+u^{14}+\cdots-\frac{11}{2}u^2+\frac{1}{2}u\end{pmatrix}$$
$$a_{12} = \begin{pmatrix}u\\-u^3+u\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-2u^{15}-4u^{14}+\cdots+4u+2\\\frac{1}{2}u^{15}+u^{14}+\cdots-\frac{11}{2}u^2+\frac{1}{2}u\end{pmatrix}$$
$$a_6 = \begin{pmatrix}u^3-2u\\-\frac{1}{2}u^{15}-u^{14}+\cdots+\frac{7}{2}u^2+\frac{1}{2}u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}-\frac{1}{2}u^{15}-u^{14}+\cdots+\frac{7}{2}u+1\\\frac{1}{2}u^{15}+u^{14}+\cdots-\frac{7}{2}u^2+\frac{1}{2}u\end{pmatrix}$$
$$a_5 = \begin{pmatrix}\frac{1}{2}u^{15}+u^{14}+\cdots-\frac{7}{2}u-1\\-\frac{5}{2}u^{15}-4u^{14}+\cdots-\frac{1}{2}u+1\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-u\\u\end{pmatrix}$$
$$a_1 = \begin{pmatrix}-u^5+2u^3+u\\u^5-3u^3+u\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-u^2+1\\u^4-2u^2\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{1}{2}u^{15}-\frac{7}{2}u^{13}+3u^{12}+10u^{11}-\frac{39}{2}u^{10}-\frac{19}{2}u^9+45u^8-21u^7-\frac{77}{2}u^6+59u^5-8u^4-31u^3+\frac{57}{2}u^2-\frac{27}{2}u-3$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{16} - 15u^{15} + \cdots - 1082u - 31$
c_2, c_3, c_5 c_6	$u^{16} + 3u^{15} + \cdots + 6u - 1$
c_4, c_9	$u^{16} + u^{15} + \cdots + 16u + 16$
c_7, c_8, c_{10} c_{11}	$u^{16} - 3u^{15} + \cdots - 6u^2 - 1$
c_{12}	$u^{16} - u^{15} + \cdots + 10u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{16} - 85y^{15} + \cdots - 746024y + 961$
c_2, c_3, c_5 c_6	$y^{16} - 25y^{15} + \cdots - 68y + 1$
c_4, c_9	$y^{16} + 25y^{15} + \cdots - 2176y + 256$
c_7, c_8, c_{10} c_{11}	$y^{16} - 17y^{15} + \cdots + 12y + 1$
c_{12}	$y^{16} + 43y^{15} + \cdots - 72y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.588394 + 0.904691I$ $a = -0.036403 + 0.941230I$ $b = 1.85781 - 0.03762I$	$18.9500 + 2.9686I$	$-2.68910 - 2.21532I$
$u = 0.588394 - 0.904691I$ $a = -0.036403 - 0.941230I$ $b = 1.85781 + 0.03762I$	$18.9500 - 2.9686I$	$-2.68910 + 2.21532I$
$u = 1.15773$ $a = 0.686514$ $b = -1.71495$	-6.77980	2.42280
$u = 0.383322 + 0.651485I$ $a = -0.022997 - 1.230160I$ $b = -1.41341 + 0.15665I$	$-8.11407 + 1.96040I$	$-3.80773 - 2.97128I$
$u = 0.383322 - 0.651485I$ $a = -0.022997 + 1.230160I$ $b = -1.41341 - 0.15665I$	$-8.11407 - 1.96040I$	$-3.80773 + 2.97128I$
$u = -1.329780 + 0.108886I$ $a = -0.33314 - 1.59285I$ $b = 0.429972 + 0.619424I$	$3.19833 - 2.02641I$	$3.60242 + 3.44848I$
$u = -1.329780 - 0.108886I$ $a = -0.33314 + 1.59285I$ $b = 0.429972 - 0.619424I$	$3.19833 + 2.02641I$	$3.60242 - 3.44848I$
$u = 1.44035$ $a = -0.317757$ $b = 1.11690$	3.33662	2.15710
$u = -0.527680$ $a = -0.542315$ $b = -0.135163$	0.784966	13.2500
$u = -1.45613 + 0.27551I$ $a = 0.88578 + 1.40121I$ $b = -1.259310 - 0.357655I$	$-2.20746 - 5.42559I$	$0.36298 + 3.83626I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-1.45613-0.27551I$ $a=\ 0.88578-1.40121I$ $b=-1.259310+0.357655I$	$-2.20746+5.42559I$	$0.36298-3.83626I$
$u=\ 1.59819$ $a=\ 0.0934299$ $b=-0.387958$	8.26971	17.0160
$u=-1.59142+0.33831I$ $a=-1.16055-1.16099I$ $b=\ 1.81685+0.10280I$	$-13.4441-7.6018I$	$-0.05971+3.02517I$
$u=-1.59142-0.33831I$ $a=-1.16055+1.16099I$ $b=\ 1.81685-0.10280I$	$-13.4441+7.6018I$	$-0.05971-3.02517I$
$u=\ 0.071327+0.313314I$ $a=\ 0.70738+1.71306I$ $b=\ 0.628677-0.215988I$	$-1.188400+0.433304I$	$-5.83178-2.04218I$
$u=\ 0.071327-0.313314I$ $a=\ 0.70738-1.71306I$ $b=\ 0.628677+0.215988I$	$-1.188400-0.433304I$	$-5.83178+2.04218I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -5$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.618034$ $a = -1.61803$ $b = 1.61803$	-7.89568	-5.00000
$u = 1.61803$ $a = 0.618034$ $b = -0.618034$	7.89568	-5.00000

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

(i) Arc colorings

$$a_7 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

$$a_8 = \begin{pmatrix} 1 \\ -u-1 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} -u \\ u \end{pmatrix}$$

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

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

$$a_6 = \begin{pmatrix} 1 \\ -u-1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u \\ -u-1 \end{pmatrix}$$

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

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

$$a_1 = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u \\ u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 0$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.618034$ $a = 0.618034$ $b = -0.618034$	0	0
$u = 1.61803$ $a = -1.61803$ $b = 1.61803$	0	0

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2+u-1)^2)(u^{16}-15u^{15}+\cdots-1082u-31)$
c_2, c_3	$((u^2+u-1)^2)(u^{16}+3u^{15}+\cdots+6u-1)$
c_4, c_9	$u^4(u^{16}+u^{15}+\cdots+16u+16)$
c_5, c_6	$((u^2-u-1)^2)(u^{16}+3u^{15}+\cdots+6u-1)$
c_7, c_8	$((u^2-u-1)^2)(u^{16}-3u^{15}+\cdots-6u^2-1)$
c_{10}, c_{11}	$((u^2+u-1)^2)(u^{16}-3u^{15}+\cdots-6u^2-1)$
c_{12}	$((u^2+u-1)^2)(u^{16}-u^{15}+\cdots+10u+1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y^2-3y+1)^2)(y^{16}-85y^{15}+\cdots-746024y+961)$
c_2, c_3, c_5 c_6	$((y^2-3y+1)^2)(y^{16}-25y^{15}+\cdots-68y+1)$
c_4, c_9	$y^4(y^{16}+25y^{15}+\cdots-2176y+256)$
c_7, c_8, c_{10} c_{11}	$((y^2-3y+1)^2)(y^{16}-17y^{15}+\cdots+12y+1)$
c_{12}	$((y^2-3y+1)^2)(y^{16}+43y^{15}+\cdots-72y+1)$