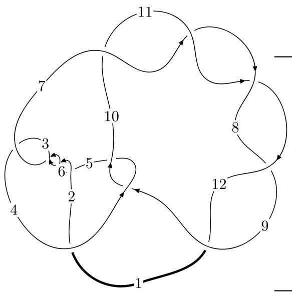
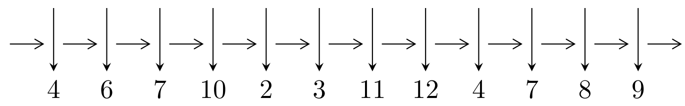
$12n_{0725}$ ($K12n_{0725}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^3 + 2u^2 + b + 2u - 1,\ a + 1,\ u^4 - 2u^3 - u^2 + 4u - 1 \rangle$$
$$I_2^u = \langle b - 2u + 2,\ a + 1,\ u^2 + u - 1 \rangle$$
$$I_3^u = \langle b - 2,\ a - u - 2,\ u^2 + u - 1 \rangle$$
$$I_4^u = \langle b,\ a - u,\ u^2 - u + 1 \rangle$$

* 4 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 10 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. $I_1^u = \langle -u^3 + 2u^2 + b + 2u - 1,\ a + 1,\ u^4 - 2u^3 - u^2 + 4u - 1\rangle$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 2u^3 - 2u^2 - 2u - 16$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^4 + 6u^3 + 23u^2 + 10u + 1$
c_2, c_3, c_5 c_6, c_7, c_8 c_{10}, c_{11}, c_{12}	$u^4 + 2u^3 - u^2 - 4u - 1$
c_4, c_9	$u^4 + 2u^3 + 8u^2 + 12u + 4$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^4 + 10y^3 + 411y^2 - 54y + 1$
c_2, c_3, c_5 c_6, c_7, c_8 c_{10}, c_{11}, c_{12}	$y^4 - 6y^3 + 15y^2 - 14y + 1$
c_4, c_9	$y^4 + 12y^3 + 24y^2 - 80y + 16$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.34859$ $a = -1.00000$ $b = -2.39292$	-11.3144	-21.8460
$u = \ \ 1.53492 + 0.55154I$ $a = -1.00000$ $b = -3.95793 - 0.75887I$	$-3.91702 - 5.91675I$	$-18.7424 + 2.9716I$
$u = \ \ 1.53492 - 0.55154I$ $a = -1.00000$ $b = -3.95793 + 0.75887I$	$-3.91702 + 5.91675I$	$-18.7424 - 2.9716I$
$u = \ \ 0.278744$ $a = -1.00000$ $b = \ \ 0.308773$	-0.590771	-16.6700

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -20$

(iv) u-Polynomials at the component

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

(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
$u = \quad 0.618034$ $a = -1.00000$ $b = -0.763932$	-1.97392	-20.0000
$u = -1.61803$ $a = -1.00000$ $b = -5.23607$	-17.7653	-20.0000

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -15$

(iv) u-Polynomials at the component

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

(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
$u = 0.618034$ $a = 2.61803$ $b = 2.00000$	-9.86960	-15.0000
$u = -1.61803$ $a = 0.381966$ $b = 2.00000$	-9.86960	-15.0000

IV. $\boldsymbol{I_4^u = \langle b,\ a-u,\ u^2-u+1\rangle}$

(i) Arc colorings

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

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -15$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^2 + 13y + 49$
c_2, c_3, c_5 c_6, c_7, c_8 c_{10}, c_{11}, c_{12}	$y^2 + y + 1$
c_4, c_9	$(y-4)^2$

(vi) Complex Volumes and Cusp Shapes

	Solutions to I_4^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=$	$0.500000+0.866025I$		
$a=$	$0.500000+0.866025I$	0	-15.0000
$b=$	0		
$u=$	$0.500000-0.866025I$		
$a=$	$0.500000-0.866025I$	0	-15.0000
$b=$	0		

V. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^2-u+7)(u^2+u-1)^2(u^4+6u^3+23u^2+10u+1)$
c_2, c_3, c_7 c_8	$(u^2+u-1)^2(u^2+u+1)(u^4+2u^3-u^2-4u-1)$
c_4, c_9	$u^4(u+2)^2(u^4+2u^3+8u^2+12u+4)$
c_5, c_6, c_{10} c_{11}, c_{12}	$(u^2-u-1)^2(u^2+u+1)(u^4+2u^3-u^2-4u-1)$

VI. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^2-3y+1)^2(y^2+13y+49)(y^4+10y^3+411y^2-54y+1)$
c_2, c_3, c_5 c_6, c_7, c_8 c_{10}, c_{11}, c_{12}	$(y^2-3y+1)^2(y^2+y+1)(y^4-6y^3+15y^2-14y+1)$
c_4, c_9	$y^4(y-4)^2(y^4+12y^3+24y^2-80y+16)$