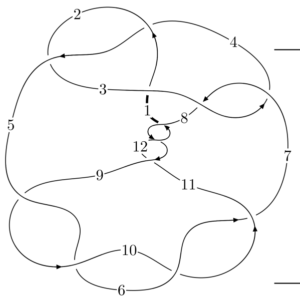
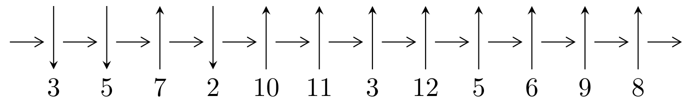
$12n_{0199}$ ($K12n_{0199}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned} I_1^u = \langle & -u^{10} + u^9 + 5u^8 - 3u^7 - 9u^6 + 7u^4 + 4u^3 - 3u^2 + b + u + 1, \\ & u^{10} - u^9 - 5u^8 + 3u^7 + 9u^6 - 7u^4 - 5u^3 + 3u^2 + a + u - 1, \\ & u^{11} - 2u^{10} - 4u^9 + 8u^8 + 6u^7 - 8u^6 - 8u^5 + 9u^3 - 2u^2 + 1 \rangle \\ I_2^u = \langle & b + 1,\ -u^3 + a + 2u - 1,\ u^6 + u^5 - 3u^4 - 2u^3 + 2u^2 - u - 1 \rangle \end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 17 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.

$$\boldsymbol{I_1^u = \langle -u^{10}+u^9+\cdots+b+1,\ u^{10}-u^9+\cdots+a-1,\ u^{11}-2u^{10}+\cdots-2u^2+1\rangle}$$

(i) Arc colorings

$$a_5 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 1 \\ -u^2 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} u \\ -u^3+u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^{10}+u^9+5u^8-3u^7-9u^6+7u^4+5u^3-3u^2-u+1 \\ u^{10}-u^9-5u^8+3u^7+9u^6-7u^4-4u^3+3u^2-u-1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^2+1 \\ u^4-2u^2 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^3-2u \\ u^{10}-u^9-5u^8+3u^7+9u^6-7u^4-4u^3+3u^2-u-1 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} 4u^{10}-3u^9-20u^8+8u^7+32u^6+5u^5-16u^4-18u^3+3u^2-3u-2 \\ -2u^{10}+u^9+12u^8-2u^7-24u^6-5u^5+16u^4+10u^3-u^2+u+1 \end{pmatrix}$$

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

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

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

$$a_8 = \begin{pmatrix} -u^9+4u^7-3u^5-2u^3-u \\ u^9-5u^7+7u^5-2u^3+u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes

$= 4u^{10}-5u^9-15u^8+17u^7+14u^6-9u^5-4u^4-3u^3+13u^2-18u+6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^{11} + 27u^{10} + \cdots + 133u + 1$
c_2, c_4	$u^{11} - 7u^{10} + \cdots - 13u + 1$
c_3, c_7	$u^{11} - u^{10} + \cdots - 64u + 64$
c_5, c_6, c_9 c_{10}	$u^{11} + 2u^{10} - 4u^9 - 8u^8 + 6u^7 + 8u^6 - 8u^5 + 9u^3 + 2u^2 - 1$
c_8, c_{11}, c_{12}	$u^{11} + 12u^9 + 38u^7 + 10u^5 - 11u^3 - 2u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^{11} - 159y^{10} + \cdots + 14833y - 1$
c_2, c_4	$y^{11} - 27y^{10} + \cdots + 133y - 1$
c_3, c_7	$y^{11} + 51y^{10} + \cdots + 49152y - 4096$
c_5, c_6, c_9 c_{10}	$y^{11} - 12y^{10} + \cdots + 4y - 1$
c_8, c_{11}, c_{12}	$y^{11} + 24y^{10} + \cdots + 4y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.556675 + 0.808029I$ $a = -0.55576 - 1.52077I$ $b = 2.58699 + 0.12834I$	$16.4992 - 2.6778I$	$2.70707 + 2.34778I$
$u = -0.556675 - 0.808029I$ $a = -0.55576 + 1.52077I$ $b = 2.58699 - 0.12834I$	$16.4992 + 2.6778I$	$2.70707 - 2.34778I$
$u = 1.26079$ $a = 1.16164$ $b = -1.67909$	1.10399	6.07670
$u = -1.44218 + 0.13979I$ $a = 0.14841 + 1.46791I$ $b = -0.179069 - 0.877965I$	$4.02973 - 3.04693I$	$7.61574 + 3.00651I$
$u = -1.44218 - 0.13979I$ $a = 0.14841 - 1.46791I$ $b = -0.179069 + 0.877965I$	$4.02973 + 3.04693I$	$7.61574 - 3.00651I$
$u = 0.263767 + 0.414640I$ $a = 0.051496 - 1.271950I$ $b = -0.696724 + 0.457926I$	$-1.53989 + 1.03784I$	$0.63702 - 4.26648I$
$u = 0.263767 - 0.414640I$ $a = 0.051496 + 1.271950I$ $b = -0.696724 - 0.457926I$	$-1.53989 - 1.03784I$	$0.63702 + 4.26648I$
$u = 1.52082$ $a = 0.186924$ $b = 0.288918$	7.24960	14.5180
$u = -0.426077$ $a = 0.683970$ $b = 0.0908333$	0.618683	16.2830
$u = 1.55733 + 0.28677I$ $a = -2.16041 + 1.82801I$ $b = 2.43848 - 0.33867I$	$-16.0730 + 6.7220I$	$5.60131 - 2.60237I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.55733 - 0.28677I$ $a = -2.16041 - 1.82801I$ $b = 2.43848 + 0.33867I$	$-16.0730 - 6.7220I$	$5.60131 + 2.60237I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 3u^5+u^4-6u^3-u^2-2u+2$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^6$
c_3, c_7	y^6
c_5, c_6, c_9 c_{10}	$y^6 - 7y^5 + 17y^4 - 16y^3 + 6y^2 - 5y + 1$
c_8, c_{11}, c_{12}	$y^6 + 5y^5 + 9y^4 + 4y^3 - 6y^2 - 5y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.493180 + 0.575288I$ $a = -0.356069 - 0.921195I$ $b = -1.00000$	$-4.60518 + 1.97241I$	$2.71215 - 3.88360I$
$u = 0.493180 - 0.575288I$ $a = -0.356069 + 0.921195I$ $b = -1.00000$	$-4.60518 - 1.97241I$	$2.71215 + 3.88360I$
$u = -0.483672$ $a = 1.85419$ $b = -1.00000$	-0.906083	3.38760
$u = -1.52087 + 0.16310I$ $a = 0.645284 + 0.801205I$ $b = -1.00000$	$2.05064 - 4.59213I$	$6.49628 + 3.92496I$
$u = -1.52087 - 0.16310I$ $a = 0.645284 - 0.801205I$ $b = -1.00000$	$2.05064 + 4.59213I$	$6.49628 - 3.92496I$
$u = 1.53904$ $a = 1.56737$ $b = -1.00000$	6.01515	6.19550

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^6)(u^{11}+27u^{10}+\cdots+133u+1)$
c_2	$((u-1)^6)(u^{11}-7u^{10}+\cdots-13u+1)$
c_3, c_7	$u^6(u^{11}-u^{10}+\cdots-64u+64)$
c_4	$((u+1)^6)(u^{11}-7u^{10}+\cdots-13u+1)$
c_5, c_6	$(u^6+u^5-3u^4-2u^3+2u^2-u-1)$ $\cdot(u^{11}+2u^{10}-4u^9-8u^8+6u^7+8u^6-8u^5+9u^3+2u^2-1)$
c_8	$(u^6-u^5+3u^4-2u^3+2u^2-u-1)$ $\cdot(u^{11}+12u^9+38u^7+10u^5-11u^3-2u+1)$
c_9, c_{10}	$(u^6-u^5-3u^4+2u^3+2u^2+u-1)$ $\cdot(u^{11}+2u^{10}-4u^9-8u^8+6u^7+8u^6-8u^5+9u^3+2u^2-1)$
c_{11}, c_{12}	$(u^6+u^5+3u^4+2u^3+2u^2+u-1)$ $\cdot(u^{11}+12u^9+38u^7+10u^5-11u^3-2u+1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$((y-1)^6)(y^{11} - 159y^{10} + \cdots + 14833y - 1)$
c_2, c_4	$((y-1)^6)(y^{11} - 27y^{10} + \cdots + 133y - 1)$
c_3, c_7	$y^6(y^{11} + 51y^{10} + \cdots + 49152y - 4096)$
c_5, c_6, c_9 c_{10}	$(y^6 - 7y^5 + \cdots - 5y + 1)(y^{11} - 12y^{10} + \cdots + 4y - 1)$
c_8, c_{11}, c_{12}	$(y^6 + 5y^5 + \cdots - 5y + 1)(y^{11} + 24y^{10} + \cdots + 4y - 1)$