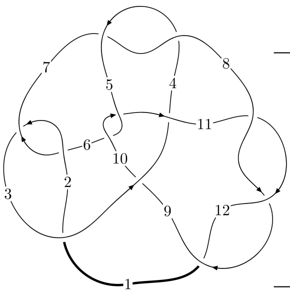
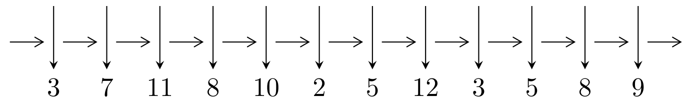
$12n_{0591}$ ($K12n_{0591}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle -u^6 + 3u^5 + 3u^4 - 17u^3 + 12u^2 + b + 4u - 2,\ 2u^7 - 9u^6 + 2u^5 + 44u^4 - 70u^3 + 21u^2 + a + 16u - 4,\ u^8 - 4u^7 - u^6 + 22u^5 - 25u^4 - 4u^3 + 12u^2 + u - 1\rangle$$

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

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 13 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. $\boldsymbol{I_1^u = \langle -u^6 + 3u^5 + 3u^4 - 17u^3 + 12u^2 + b + 4u - 2,\ 2u^7 - 9u^6 + \cdots + a - 4,\ u^8 - 4u^7 + \cdots + u - 1\rangle}$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -2u^7 + 9u^6 - 2u^5 - 44u^4 + 70u^3 - 21u^2 - 16u + 4 \\ u^6 - 3u^5 - 3u^4 + 17u^3 - 12u^2 - 4u + 2 \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -3u^7 + 12u^6 + u^5 - 61u^4 + 82u^3 - 17u^2 - 18u + 4 \\ -u^7 + 4u^6 - 20u^4 + 29u^3 - 8u^2 - 6u + 2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -2u^7 + 8u^6 + u^5 - 41u^4 + 53u^3 - 9u^2 - 12u + 2 \\ -u^7 + 4u^6 - 20u^4 + 29u^3 - 8u^2 - 6u + 2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} -u^6 + 2u^5 + 4u^4 - 11u^3 + 6u^2 + 1 \\ -u^7 + u^6 + 7u^5 - 8u^4 - 10u^3 + 12u^2 + u - 1 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^7 - u^6 - 8u^5 + 9u^4 + 15u^3 - 19u^2 - u + 1 \\ 3u^7 - 6u^6 - 16u^5 + 37u^4 + u^3 - 25u^2 + 2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} 3u^7 - 11u^6 - 6u^5 + 58u^4 - 56u^3 - u^2 + 12u - 1 \\ 2u^7 - 8u^6 - 5u^5 + 42u^4 - 35u^3 - 4u^2 + 6u - 1 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u^7 + 2u^6 + 5u^5 - 12u^4 + u^3 + 6u^2 + u \\ -2u^7 + 4u^6 + 10u^5 - 24u^4 + 2u^3 + 13u^2 + u - 1 \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= -8u^7 + 32u^6 + 4u^5 - 163u^4 + 213u^3 - 40u^2 - 51u - 4$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^8+7u^7+35u^6+244u^5+493u^4+885u^3+772u^2+608u+64$
c_2, c_6	$u^8-9u^7+37u^6-88u^5+125u^4-101u^3+34u^2+8u-8$
c_3	$u^8+2u^7+4u^6-6u^5+10u^4-3u^3+5u^2-u-1$
c_4, c_7	$u^8-3u^7+9u^6-2u^5-14u^3-19u^2-8u-1$
c_5, c_9, c_{10}	$u^8+2u^7+10u^6+51u^5+8u^4+28u^3+10u^2+2u+1$
c_8, c_{11}, c_{12}	$u^8+4u^7-u^6-22u^5-25u^4+4u^3+12u^2-u-1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^8 + 21y^7 + \cdots - 270848y + 4096$
c_2, c_6	$y^8 - 7y^7 + 35y^6 - 244y^5 + 493y^4 - 885y^3 + 772y^2 - 608y + 64$
c_3	$y^8 + 4y^7 + 60y^6 + 66y^5 + 106y^4 + 71y^3 - y^2 - 11y + 1$
c_4, c_7	$y^8 + 9y^7 + 69y^6 - 126y^5 - 448y^4 - 246y^3 + 137y^2 - 26y + 1$
c_5, c_9, c_{10}	$y^8 + 16y^7 - 88y^6 - 2533y^5 - 2598y^4 - 808y^3 + 4y^2 + 16y + 1$
c_8, c_{11}, c_{12}	$y^8 - 18y^7 + 127y^6 - 442y^5 + 783y^4 - 658y^3 + 202y^2 - 25y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.357740 + 0.195354I$ $a = -0.300439 + 0.153458I$ $b = -0.766915 + 0.837154I$	$-3.40670 + 1.82723I$	$-16.1033 - 2.4545I$
$u = 1.357740 - 0.195354I$ $a = -0.300439 - 0.153458I$ $b = -0.766915 - 0.837154I$	$-3.40670 - 1.82723I$	$-16.1033 + 2.4545I$
$u = -0.432193 + 0.048912I$ $a = 0.26933 + 2.64283I$ $b = 0.144443 + 0.793261I$	$2.34111 - 2.75408I$	$-10.98687 + 7.43235I$
$u = -0.432193 - 0.048912I$ $a = 0.26933 - 2.64283I$ $b = 0.144443 - 0.793261I$	$2.34111 + 2.75408I$	$-10.98687 - 7.43235I$
$u = 0.276903$ $a = -0.812540$ $b = 0.311154$	-0.562481	-17.6050
$u = 2.08809 + 0.20687I$ $a = 0.80818 + 1.18869I$ $b = 1.72548 + 2.10674I$	$3.25293 - 6.36321I$	$-12.47350 + 2.40837I$
$u = 2.08809 - 0.20687I$ $a = 0.80818 - 1.18869I$ $b = 1.72548 - 2.10674I$	$3.25293 + 6.36321I$	$-12.47350 - 2.40837I$
$u = -2.30418$ $a = -0.741615$ $b = -0.517168$	-18.6166	-11.2680

II.

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

(i) Arc colorings

$$a_8 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u \\ -u^3+u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} -u^4-3u^3-u^2+2u+1 \\ -u^4-2u^3+u^2+u \end{pmatrix}$$

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

$$a_4 = \begin{pmatrix} -2u^3-3u^2+3u \\ -u^3-u^2+2u-1 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u^3-2u^2+u+1 \\ -u^3-u^2+2u-1 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u^4+2u^3-2u^2-2u+2 \\ -u^3-2u^2+2u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -2u^2-3u+3 \\ -u^4-3u^3+2u+1 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} -u^4-3u^3+4u-1 \\ u^4+u^3-u^2+u-2 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u^4-3u^3+4u \\ u^2+u-1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -u^4-3u^3-4u^2-u-8$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1	$u^5 - 7u^4 + 15u^3 - 20u^2 + 9u - 1$
c_2	$u^5 - u^4 - 3u^3 + 3u - 1$
c_3	$u^5 - u^4 - 3u^3 - 2u^2 - 3u - 1$
c_4	$u^5 - 2u^4 - u^3 + 4u^2 - 6u + 3$
c_5, c_9	$u^5 - 3u^4 + u^3 + u^2 - 4u + 1$
c_6	$u^5 + u^4 - 3u^3 + 3u + 1$
c_7	$u^5 + 2u^4 - u^3 - 4u^2 - 6u - 3$
c_8	$u^5 + 3u^4 - 3u^2 + u - 1$
c_{10}	$u^5 + 3u^4 + u^3 - u^2 - 4u - 1$
c_{11}, c_{12}	$u^5 - 3u^4 + 3u^2 + u + 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1	$y^5 - 19y^4 - 37y^3 - 144y^2 + 41y - 1$
c_2, c_6	$y^5 - 7y^4 + 15y^3 - 20y^2 + 9y - 1$
c_3	$y^5 - 7y^4 - y^3 + 12y^2 + 5y - 1$
c_4, c_7	$y^5 - 6y^4 + 5y^3 + 8y^2 + 12y - 9$
c_5, c_9, c_{10}	$y^5 - 7y^4 - y^3 - 3y^2 + 14y - 1$
c_8, c_{11}, c_{12}	$y^5 - 9y^4 + 20y^3 - 3y^2 - 5y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.896190$ $a = -0.815182$ $b = -0.385277$	-2.59633	-14.9130
$u = 0.116133 + 0.503198I$ $a = 1.68814 + 1.26672I$ $b = 0.005908 + 0.890217I$	$2.78994 + 2.01434I$	$-6.94110 - 0.59350I$
$u = 0.116133 - 0.503198I$ $a = 1.68814 - 1.26672I$ $b = 0.005908 - 0.890217I$	$2.78994 - 2.01434I$	$-6.94110 + 0.59350I$
$u = -1.78655$ $a = 1.15452$ $b = 2.62235$	-12.8780	-12.0610
$u = -2.34191$ $a = -0.715612$ $b = -1.24889$	-19.7144	-19.1430

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$(u^5-7u^4+15u^3-20u^2+9u-1)$ $\cdot(u^8+7u^7+35u^6+244u^5+493u^4+885u^3+772u^2+608u+64)$
c_2	$(u^5-u^4-3u^3+3u-1)$ $\cdot(u^8-9u^7+37u^6-88u^5+125u^4-101u^3+34u^2+8u-8)$
c_3	$(u^5-u^4-3u^3-2u^2-3u-1)$ $\cdot(u^8+2u^7+4u^6-6u^5+10u^4-3u^3+5u^2-u-1)$
c_4	$(u^5-2u^4-u^3+4u^2-6u+3)$ $\cdot(u^8-3u^7+9u^6-2u^5-14u^3-19u^2-8u-1)$
c_5, c_9	$(u^5-3u^4+u^3+u^2-4u+1)$ $\cdot(u^8+2u^7+10u^6+51u^5+8u^4+28u^3+10u^2+2u+1)$
c_6	$(u^5+u^4-3u^3+3u+1)$ $\cdot(u^8-9u^7+37u^6-88u^5+125u^4-101u^3+34u^2+8u-8)$
c_7	$(u^5+2u^4-u^3-4u^2-6u-3)$ $\cdot(u^8-3u^7+9u^6-2u^5-14u^3-19u^2-8u-1)$
c_8	$(u^5+3u^4-3u^2+u-1)$ $\cdot(u^8+4u^7-u^6-22u^5-25u^4+4u^3+12u^2-u-1)$
c_{10}	$(u^5+3u^4+u^3-u^2-4u-1)$ $\cdot(u^8+2u^7+10u^6+51u^5+8u^4+28u^3+10u^2+2u+1)$
c_{11}, c_{12}	$(u^5-3u^4+3u^2+u+1)$ $\cdot(u^8+4u^7-u^6-22u^5-25u^4+4u^3+12u^2-u-1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1	$(y^5 - 19y^4 - 37y^3 - 144y^2 + 41y - 1)$ $\cdot (y^8 + 21y^7 + \cdots - 270848y + 4096)$
c_2, c_6	$(y^5 - 7y^4 + 15y^3 - 20y^2 + 9y - 1)$ $\cdot (y^8 - 7y^7 + 35y^6 - 244y^5 + 493y^4 - 885y^3 + 772y^2 - 608y + 64)$
c_3	$(y^5 - 7y^4 - y^3 + 12y^2 + 5y - 1)$ $\cdot (y^8 + 4y^7 + 60y^6 + 66y^5 + 106y^4 + 71y^3 - y^2 - 11y + 1)$
c_4, c_7	$(y^5 - 6y^4 + 5y^3 + 8y^2 + 12y - 9)$ $\cdot (y^8 + 9y^7 + 69y^6 - 126y^5 - 448y^4 - 246y^3 + 137y^2 - 26y + 1)$
c_5, c_9, c_{10}	$(y^5 - 7y^4 - y^3 - 3y^2 + 14y - 1)$ $\cdot (y^8 + 16y^7 - 88y^6 - 2533y^5 - 2598y^4 - 808y^3 + 4y^2 + 16y + 1)$
c_8, c_{11}, c_{12}	$(y^5 - 9y^4 + 20y^3 - 3y^2 - 5y - 1)$ $\cdot (y^8 - 18y^7 + 127y^6 - 442y^5 + 783y^4 - 658y^3 + 202y^2 - 25y + 1)$