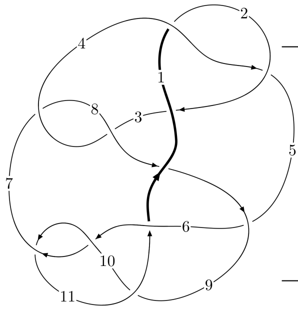
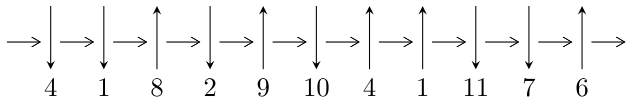
$11n_{56}$ $(K11n_{56})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$I_1^u = \langle u^{22} - u^{21} + \cdots - u^3 + b,\ -u^{22} + u^{21} + \cdots + a + 1,\ u^{23} - 2u^{22} + \cdots - 2u + 1 \rangle$$
$$I_2^u = \langle -u^3 + b + u + 1,\ -u^4 - u^3 + u^2 + a + u,\ u^6 + u^5 - u^4 - 2u^3 + u + 1 \rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 29 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.

$\boldsymbol{I_1^u = \langle u^{22} - u^{21} + \cdots - u^3 + b,\ -u^{22} + u^{21} + \cdots + a + 1,\ u^{23} - 2u^{22} + \cdots - 2u + 1 \rangle}$

(i) Arc colorings

$$a_6 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

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

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

$$a_4 = \begin{pmatrix} u^{22} - u^{21} + \cdots + 2u - 1 \\ -u^{22} + u^{21} + \cdots - 5u^4 + u^3 \end{pmatrix}$$

$$a_2 = \begin{pmatrix} u^{20} - u^{19} + \cdots - u + 1 \\ u^{22} - u^{21} + \cdots - u^3 + u^2 \end{pmatrix}$$

$$a_3 = \begin{pmatrix} u^{22} - u^{21} + \cdots - 4u^3 + u^2 \\ u^{22} - u^{21} + \cdots + 2u^2 - u \end{pmatrix}$$

$$a_9 = \begin{pmatrix} u^3 \\ u^5 - u^3 + u \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^8 - u^6 + u^4 + 1 \\ u^{10} - 2u^8 + 3u^6 - 2u^4 + u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^{11} + 2u^9 - 2u^7 + u^3 \\ -u^{11} + 3u^9 - 4u^7 + 3u^5 - u^3 + u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u^{11} + 2u^9 - 2u^7 + u^3 \\ -u^{11} + 3u^9 - 4u^7 + 3u^5 - u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= 8u^{22} - 10u^{21} - 40u^{20} + 65u^{19} + 85u^{18} - 190u^{17} - 61u^{16} + 307u^{15} - 81u^{14} - 264u^{13} + 228u^{12} + 59u^{11} - 203u^{10} + 86u^9 + 76u^8 - 58u^7 - 12u^6 - 8u^5 + 26u^4 - 7u^3 + 3u^2 + 8u - 10$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{23} - 7u^{22} + \cdots - 7u + 1$
c_2	$u^{23} + 35u^{22} + \cdots + 11u + 1$
c_3, c_7	$u^{23} - u^{22} + \cdots + 128u + 64$
c_5	$u^{23} - 2u^{22} + \cdots - 108u - 36$
c_6, c_{10}	$u^{23} + 2u^{22} + \cdots - 2u - 1$
c_8	$u^{23} + 24u^{21} + \cdots + 2u + 1$
c_9	$u^{23} + 12u^{22} + \cdots + 2u + 1$
c_{11}	$u^{23} + 6u^{22} + \cdots - 18u - 7$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{23} - 35y^{22} + \cdots + 11y - 1$
c_2	$y^{23} - 87y^{22} + \cdots + 15y - 1$
c_3, c_7	$y^{23} + 39y^{22} + \cdots + 28672y - 4096$
c_5	$y^{23} + 12y^{22} + \cdots + 10296y - 1296$
c_6, c_{10}	$y^{23} - 12y^{22} + \cdots + 2y - 1$
c_8	$y^{23} + 48y^{22} + \cdots + 2y - 1$
c_9	$y^{23} + 24y^{21} + \cdots + 6y - 1$
c_{11}	$y^{23} + 12y^{22} + \cdots + 282y - 49$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.797336 + 0.702236I$ $a = -1.35368 + 0.49960I$ $b = -0.843379 + 0.494457I$	$-9.64155 - 2.65369I$	$-2.71409 + 2.86915I$
$u = 0.797336 - 0.702236I$ $a = -1.35368 - 0.49960I$ $b = -0.843379 - 0.494457I$	$-9.64155 + 2.65369I$	$-2.71409 - 2.86915I$
$u = 1.027390 + 0.366873I$ $a = 0.534979 + 0.341386I$ $b = -0.263822 + 0.275329I$	$-1.85876 - 1.44380I$	$-2.27537 + 0.68239I$
$u = 1.027390 - 0.366873I$ $a = 0.534979 - 0.341386I$ $b = -0.263822 - 0.275329I$	$-1.85876 + 1.44380I$	$-2.27537 - 0.68239I$
$u = 0.255023 + 0.855822I$ $a = -0.831897 - 0.002920I$ $b = 0.09815 - 2.48508I$	$-12.76380 + 5.09874I$	$-3.17808 - 1.98307I$
$u = 0.255023 - 0.855822I$ $a = -0.831897 + 0.002920I$ $b = 0.09815 + 2.48508I$	$-12.76380 - 5.09874I$	$-3.17808 + 1.98307I$
$u = -1.079080 + 0.536804I$ $a = -0.144531 + 0.926453I$ $b = 0.323737 + 0.843029I$	$-0.53628 + 5.30661I$	$1.77241 - 5.11876I$
$u = -1.079080 - 0.536804I$ $a = -0.144531 - 0.926453I$ $b = 0.323737 - 0.843029I$	$-0.53628 - 5.30661I$	$1.77241 + 5.11876I$
$u = -1.141520 + 0.416414I$ $a = 0.33767 - 2.48715I$ $b = -1.03478 - 2.11364I$	$-5.57676 + 2.33070I$	$-7.43736 - 2.84176I$
$u = -1.141520 - 0.416414I$ $a = 0.33767 + 2.48715I$ $b = -1.03478 + 2.11364I$	$-5.57676 - 2.33070I$	$-7.43736 + 2.84176I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.693757 + 0.359279I$ $a = 0.576016 + 0.850672I$ $b = -0.158914 - 0.203116I$	$-0.87588 - 1.51254I$	$-2.24997 + 5.09221I$
$u = 0.693757 - 0.359279I$ $a = 0.576016 - 0.850672I$ $b = -0.158914 + 0.203116I$	$-0.87588 + 1.51254I$	$-2.24997 - 5.09221I$
$u = 1.146720 + 0.479206I$ $a = -1.60133 - 1.31891I$ $b = 0.29675 - 1.85371I$	$-5.12386 - 5.67209I$	$-6.64054 + 5.01271I$
$u = 1.146720 - 0.479206I$ $a = -1.60133 + 1.31891I$ $b = 0.29675 + 1.85371I$	$-5.12386 + 5.67209I$	$-6.64054 - 5.01271I$
$u = -0.401701 + 0.617973I$ $a = 0.562564 + 0.078186I$ $b = 0.450330 - 0.386164I$	$1.43616 - 0.72615I$	$6.25783 + 0.91942I$
$u = -0.401701 - 0.617973I$ $a = 0.562564 - 0.078186I$ $b = 0.450330 + 0.386164I$	$1.43616 + 0.72615I$	$6.25783 - 0.91942I$
$u = -1.235200 + 0.278047I$ $a = -0.73735 + 2.60704I$ $b = 1.07712 + 1.98419I$	$-17.5522 - 1.4869I$	$-8.02521 - 0.25180I$
$u = -1.235200 - 0.278047I$ $a = -0.73735 - 2.60704I$ $b = 1.07712 - 1.98419I$	$-17.5522 + 1.4869I$	$-8.02521 + 0.25180I$
$u = -0.718932$ $a = -1.72386$ $b = -1.61562$	-2.53646	-1.61890
$u = 1.182790 + 0.567983I$ $a = 2.25195 + 2.10373I$ $b = 0.17909 + 3.14085I$	$-15.5409 - 10.3372I$	$-6.00224 + 5.46879I$

Solutions to I_1^u	$\sqrt{-1}(\text{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 1.182790 - 0.567983I$ $a = 2.25195 - 2.10373I$ $b = 0.17909 - 3.14085I$	$-15.5409 + 10.3372I$	$-6.00224 - 5.46879I$
$u = 0.113951 + 0.644421I$ $a = -0.232464 - 0.843186I$ $b = -0.316473 + 1.333070I$	$-2.25261 + 1.36983I$	$-3.69794 - 1.43293I$
$u = 0.113951 - 0.644421I$ $a = -0.232464 + 0.843186I$ $b = -0.316473 - 1.333070I$	$-2.25261 - 1.36983I$	$-3.69794 + 1.43293I$

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

(i) Arc colorings

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

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(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_8 c_{10}	$y^6 - 3y^5 + 5y^4 - 4y^3 + 2y^2 - y + 1$
c_9, c_{11}	$y^6 + y^5 + 5y^4 + 6y^2 + 3y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 1.002190 + 0.295542I$ $a = -0.685196 + 1.063260I$ $b = -1.258210 + 0.569162I$	$-3.53554 - 0.92430I$	$-6.79748 + 1.68215I$
$u = 1.002190 - 0.295542I$ $a = -0.685196 - 1.063260I$ $b = -1.258210 - 0.569162I$	$-3.53554 + 0.92430I$	$-6.79748 - 1.68215I$
$u = -0.428243 + 0.664531I$ $a = 0.917982 + 0.270708I$ $b = -0.082955 - 0.592379I$	$0.245672 - 0.924305I$	$-1.96974 + 0.88960I$
$u = -0.428243 - 0.664531I$ $a = 0.917982 - 0.270708I$ $b = -0.082955 + 0.592379I$	$0.245672 + 0.924305I$	$-1.96974 - 0.88960I$
$u = -1.073950 + 0.558752I$ $a = -0.732786 + 0.381252I$ $b = -0.158836 + 1.200140I$	$-1.64493 + 5.69302I$	$-5.23279 - 6.15196I$
$u = -1.073950 - 0.558752I$ $a = -0.732786 - 0.381252I$ $b = -0.158836 - 1.200140I$	$-1.64493 - 5.69302I$	$-5.23279 + 6.15196I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^6)(u^{23}-7u^{22}+\cdots-7u+1)$
c_2	$((u+1)^6)(u^{23}+35u^{22}+\cdots+11u+1)$
c_3, c_7	$u^6(u^{23}-u^{22}+\cdots+128u+64)$
c_4	$((u+1)^6)(u^{23}-7u^{22}+\cdots-7u+1)$
c_5	$(u^6-u^5-u^4+2u^3-u+1)(u^{23}-2u^{22}+\cdots-108u-36)$
c_6	$(u^6+u^5-u^4-2u^3+u+1)(u^{23}+2u^{22}+\cdots-2u-1)$
c_8	$(u^6-u^5-u^4+2u^3-u+1)(u^{23}+24u^{21}+\cdots+2u+1)$
c_9	$(u^6-3u^5+5u^4-4u^3+2u^2-u+1)(u^{23}+12u^{22}+\cdots+2u+1)$
c_{10}	$(u^6-u^5-u^4+2u^3-u+1)(u^{23}+2u^{22}+\cdots-2u-1)$
c_{11}	$(u^6-3u^5+5u^4-4u^3+2u^2-u+1)(u^{23}+6u^{22}+\cdots-18u-7)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$((y-1)^6)(y^{23} - 35y^{22} + \cdots + 11y - 1)$
c_2	$((y-1)^6)(y^{23} - 87y^{22} + \cdots + 15y - 1)$
c_3, c_7	$y^6(y^{23} + 39y^{22} + \cdots + 28672y - 4096)$
c_5	$(y^6 - 3y^5 + 5y^4 - 4y^3 + 2y^2 - y + 1)$ $\cdot (y^{23} + 12y^{22} + \cdots + 10296y - 1296)$
c_6, c_{10}	$(y^6 - 3y^5 + 5y^4 - 4y^3 + 2y^2 - y + 1)(y^{23} - 12y^{22} + \cdots + 2y - 1)$
c_8	$(y^6 - 3y^5 + 5y^4 - 4y^3 + 2y^2 - y + 1)(y^{23} + 48y^{22} + \cdots + 2y - 1)$
c_9	$(y^6 + y^5 + 5y^4 + 6y^2 + 3y + 1)(y^{23} + 24y^{21} + \cdots + 6y - 1)$
c_{11}	$(y^6 + y^5 + 5y^4 + 6y^2 + 3y + 1)(y^{23} + 12y^{22} + \cdots + 282y - 49)$