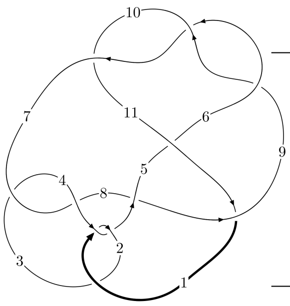
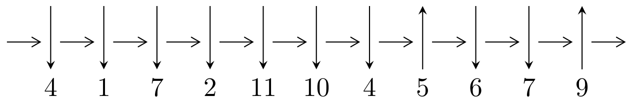
$11n_{59}$ ($K11n_{59}$)



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned} I_1^u &= \langle u^{18} - 8u^{16} + 25u^{14} - 36u^{12} + 19u^{10} + 4u^8 + 2u^7 - 2u^6 - 6u^5 - 4u^4 + 4u^3 + u^2 + b + 2u, \\ &\quad - u^{29} - u^{28} + \cdots + a - 1,\ u^{31} + 2u^{30} + \cdots + 2u + 1\rangle \\ I_2^u &= \langle -u^4 + 2u^2 + b,\ -u^3 + a + u + 1,\ u^5 - u^4 - 2u^3 + u^2 + u + 1\rangle \end{aligned}$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 36 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.

$$\boldsymbol{I_1^u = \langle u^{18}-8u^{16}+\cdots+b+2u,\ -u^{29}-u^{28}+\cdots+a-1,\ u^{31}+2u^{30}+\cdots+2u+1\rangle}$$

(i) Arc colorings

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

$$a_9 = \begin{pmatrix}1\\0\end{pmatrix}$$

$$a_{10} = \begin{pmatrix}1\\u^2\end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix}-u^2+1\\-u^4+2u^2\end{pmatrix}$$

$$a_1 = \begin{pmatrix}-u^4+u^2+1\\-u^4+2u^2\end{pmatrix}$$

$$a_4 = \begin{pmatrix}u^{29}+u^{28}+\cdots+u+1\\-u^{18}+8u^{16}+\cdots-u^2-2u\end{pmatrix}$$

$$a_3 = \begin{pmatrix}2u^{30}+2u^{29}+\cdots+2u+2\\2u^{30}+u^{29}+\cdots+u+2\end{pmatrix}$$

$$a_2 = \begin{pmatrix}u^{30}+u^{29}+\cdots+2u+2\\u^{30}-13u^{28}+\cdots+7u^3+1\end{pmatrix}$$

$$a_5 = \begin{pmatrix}u^5-2u^3+u\\u^7-3u^5+2u^3+u\end{pmatrix}$$

$$a_8 = \begin{pmatrix}u^{12}-5u^{10}+9u^8-6u^6+u^2+1\\u^{14}-6u^{12}+13u^{10}-10u^8-2u^6+4u^4+u^2\end{pmatrix}$$

$$a_8 = \begin{pmatrix}u^{12}-5u^{10}+9u^8-6u^6+u^2+1\\u^{14}-6u^{12}+13u^{10}-10u^8-2u^6+4u^4+u^2\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes
$= 2u^{30}-26u^{28}+5u^{27}+147u^{26}-59u^{25}-460u^{24}+296u^{23}+817u^{22}-799u^{21}-658u^{20}+1179u^{19}-269u^{18}-741u^{17}+1010u^{16}-254u^{15}-570u^{14}+536u^{13}-222u^{12}-2u^{11}+186u^{10}-168u^9+98u^8-68u^7-u^6+41u^5-40u^4+35u^3-19u^2+5u-6$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{31} - 6u^{30} + \cdots - 4u + 1$
c_2	$u^{31} + 8u^{30} + \cdots + 12u + 1$
c_3, c_7	$u^{31} + u^{30} + \cdots + 64u + 32$
c_5	$u^{31} - 6u^{30} + \cdots - 18u + 5$
c_6, c_9, c_{10}	$u^{31} + 2u^{30} + \cdots + 2u + 1$
c_8	$u^{31} - 2u^{30} + \cdots + 2u + 1$
c_{11}	$u^{31} + 8u^{30} + \cdots + 30u + 7$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{31} - 8y^{30} + \cdots + 12y - 1$
c_2	$y^{31} + 36y^{30} + \cdots + 48y - 1$
c_3, c_7	$y^{31} + 33y^{30} + \cdots - 10752y - 1024$
c_5	$y^{31} + 4y^{30} + \cdots + 174y - 25$
c_6, c_9, c_{10}	$y^{31} - 28y^{30} + \cdots + 2y - 1$
c_8	$y^{31} - 36y^{30} + \cdots + 2y - 1$
c_{11}	$y^{31} + 32y^{29} + \cdots + 1054y - 49$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.953391 + 0.341205I$ $a = -0.060208 - 0.824217I$ $b = -0.154559 - 1.385810I$	$5.55958 - 3.20800I$	$-6.18542 + 3.44031I$
$u = 0.953391 - 0.341205I$ $a = -0.060208 + 0.824217I$ $b = -0.154559 + 1.385810I$	$5.55958 + 3.20800I$	$-6.18542 - 3.44031I$
$u = 0.825063 + 0.385979I$ $a = 0.618554 + 1.193580I$ $b = -0.63882 + 1.61785I$	$5.21409 + 3.77786I$	$-6.77733 - 1.30179I$
$u = 0.825063 - 0.385979I$ $a = 0.618554 - 1.193580I$ $b = -0.63882 - 1.61785I$	$5.21409 - 3.77786I$	$-6.77733 + 1.30179I$
$u = 0.256805 + 0.769307I$ $a = 1.018830 - 0.906649I$ $b = 0.90393 + 1.86214I$	$7.07782 - 7.98216I$	$-4.46644 + 5.97470I$
$u = 0.256805 - 0.769307I$ $a = 1.018830 + 0.906649I$ $b = 0.90393 - 1.86214I$	$7.07782 + 7.98216I$	$-4.46644 - 5.97470I$
$u = -1.191040 + 0.124902I$ $a = -0.150730 + 0.017487I$ $b = 0.447590 + 0.550052I$	$-1.84615 + 0.55694I$	$-6.11373 + 0.01533I$
$u = -1.191040 - 0.124902I$ $a = -0.150730 - 0.017487I$ $b = 0.447590 - 0.550052I$	$-1.84615 - 0.55694I$	$-6.11373 - 0.01533I$
$u = 0.195264 + 0.773377I$ $a = -1.255470 + 0.164780I$ $b = -0.177950 - 1.155760I$	$7.92090 - 0.90622I$	$-3.00591 + 1.13607I$
$u = 0.195264 - 0.773377I$ $a = -1.255470 - 0.164780I$ $b = -0.177950 + 1.155760I$	$7.92090 + 0.90622I$	$-3.00591 - 1.13607I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.371835 + 0.568068I$ $a = 0.797944 - 0.031326I$ $b = -0.214074 - 0.837766I$	$-0.87857 + 1.75044I$	$-3.85072 - 4.54648I$
$u = -0.371835 - 0.568068I$ $a = 0.797944 + 0.031326I$ $b = -0.214074 + 0.837766I$	$-0.87857 - 1.75044I$	$-3.85072 + 4.54648I$
$u = 1.325090 + 0.154351I$ $a = -2.42287 + 0.53159I$ $b = -1.338960 - 0.362468I$	$-5.25829 - 1.15681I$	$-12.57201 + 1.48822I$
$u = 1.325090 - 0.154351I$ $a = -2.42287 - 0.53159I$ $b = -1.338960 + 0.362468I$	$-5.25829 + 1.15681I$	$-12.57201 - 1.48822I$
$u = -0.156640 + 0.637516I$ $a = -0.041090 - 1.349110I$ $b = -0.896955 + 0.568672I$	$1.00966 + 2.22196I$	$-3.40092 - 5.38737I$
$u = -0.156640 - 0.637516I$ $a = -0.041090 + 1.349110I$ $b = -0.896955 - 0.568672I$	$1.00966 - 2.22196I$	$-3.40092 + 5.38737I$
$u = -1.351700 + 0.206762I$ $a = 0.051503 - 0.972430I$ $b = -0.62993 - 1.46088I$	$-6.05722 + 3.45238I$	$-10.37888 - 2.19312I$
$u = -1.351700 - 0.206762I$ $a = 0.051503 + 0.972430I$ $b = -0.62993 + 1.46088I$	$-6.05722 - 3.45238I$	$-10.37888 + 2.19312I$
$u = 1.355400 + 0.255032I$ $a = 1.82855 - 0.84093I$ $b = 1.180600 + 0.666054I$	$-3.77819 - 5.48065I$	$-9.45984 + 5.94075I$
$u = 1.355400 - 0.255032I$ $a = 1.82855 + 0.84093I$ $b = 1.180600 - 0.666054I$	$-3.77819 + 5.48065I$	$-9.45984 - 5.94075I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.374710 + 0.318270I$ $a = 1.72875 - 0.73774I$ $b = 0.359105 - 0.934571I$	$2.95558 + 4.85038I$	$-7.33363 - 2.61184I$
$u = -1.374710 - 0.318270I$ $a = 1.72875 + 0.73774I$ $b = 0.359105 + 0.934571I$	$2.95558 - 4.85038I$	$-7.33363 + 2.61184I$
$u = -1.40893 + 0.31052I$ $a = -2.64694 + 0.69829I$ $b = -1.12415 + 1.93346I$	$1.77560 + 11.89500I$	$-8.90588 - 6.87931I$
$u = -1.40893 - 0.31052I$ $a = -2.64694 - 0.69829I$ $b = -1.12415 - 1.93346I$	$1.77560 - 11.89500I$	$-8.90588 + 6.87931I$
$u = -1.45164 + 0.04136I$ $a = 0.77948 + 1.85121I$ $b = 0.915385 + 0.997789I$	$-1.95006 - 2.95334I$	$-10.65956 + 2.73175I$
$u = -1.45164 - 0.04136I$ $a = 0.77948 - 1.85121I$ $b = 0.915385 - 0.997789I$	$-1.95006 + 2.95334I$	$-10.65956 - 2.73175I$
$u = 1.43633 + 0.21708I$ $a = -0.458519 - 1.234670I$ $b = 0.376409 - 1.104670I$	$-6.67621 - 4.65354I$	$-6.91647 + 4.60285I$
$u = 1.43633 - 0.21708I$ $a = -0.458519 + 1.234670I$ $b = 0.376409 + 1.104670I$	$-6.67621 + 4.65354I$	$-6.91647 - 4.60285I$
$u = 0.127284 + 0.484686I$ $a = 0.09092 + 1.50930I$ $b = 0.622522 - 0.861672I$	$-1.33374 - 0.83076I$	$-4.07951 - 0.75098I$
$u = 0.127284 - 0.484686I$ $a = 0.09092 - 1.50930I$ $b = 0.622522 + 0.861672I$	$-1.33374 + 0.83076I$	$-4.07951 + 0.75098I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.336229$ $a = \quad 1.24262$ $b = \quad 0.739715$	-0.889878	-11.7880

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

(i) Arc colorings

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

$$a_9 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

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

$$a_{11} = \begin{pmatrix} -u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$

$$a_1 = \begin{pmatrix} -u^4 + u^2 + 1 \\ -u^4 + 2u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^3 - u - 1 \\ u^4 - 2u^2 \end{pmatrix}$$

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

$$a_2 = \begin{pmatrix} -u^4 + u^3 + u^2 - u \\ 0 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} u^4 - u^2 - 1 \\ u^4 - 2u^2 \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

$$a_8 = \begin{pmatrix} -u \\ -u^3 + u \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= 3u^3 + u^2 - 8u - 15$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^5$
c_3, c_7	y^5
c_5	$y^5 - y^4 + 8y^3 - 3y^2 + 3y - 1$
c_6, c_9, c_{10}	$y^5 - 5y^4 + 8y^3 - 3y^2 - y - 1$
c_8, c_{11}	$y^5 + 3y^4 + 4y^3 + y^2 - y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -1.21774$ $a = -1.58802$ $b = -0.766826$	-4.04602	-9.19250
$u = -0.309916 + 0.549911I$ $a = -0.438694 - 0.557752I$ $b = 0.339110 + 0.822375I$	$-1.97403 + 1.53058I$	$-11.97286 - 4.76366I$
$u = -0.309916 - 0.549911I$ $a = -0.438694 + 0.557752I$ $b = 0.339110 - 0.822375I$	$-1.97403 - 1.53058I$	$-11.97286 + 4.76366I$
$u = 1.41878 + 0.21917I$ $a = 0.232705 + 1.093810I$ $b = -0.455697 + 1.200150I$	$-7.51750 - 4.40083I$	$-16.4309 + 2.8075I$
$u = 1.41878 - 0.21917I$ $a = 0.232705 - 1.093810I$ $b = -0.455697 - 1.200150I$	$-7.51750 + 4.40083I$	$-16.4309 - 2.8075I$

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u-1)^5)(u^{31}-6u^{30}+\cdots-4u+1)$
c_2	$((u+1)^5)(u^{31}+8u^{30}+\cdots+12u+1)$
c_3, c_7	$u^5(u^{31}+u^{30}+\cdots+64u+32)$
c_4	$((u+1)^5)(u^{31}-6u^{30}+\cdots-4u+1)$
c_5	$(u^5-3u^4+4u^3-u^2-u+1)(u^{31}-6u^{30}+\cdots-18u+5)$
c_6	$(u^5+u^4-2u^3-u^2+u-1)(u^{31}+2u^{30}+\cdots+2u+1)$
c_8	$(u^5+u^4+2u^3+u^2+u+1)(u^{31}-2u^{30}+\cdots+2u+1)$
c_9, c_{10}	$(u^5-u^4-2u^3+u^2+u+1)(u^{31}+2u^{30}+\cdots+2u+1)$
c_{11}	$(u^5+u^4+2u^3+u^2+u+1)(u^{31}+8u^{30}+\cdots+30u+7)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$((y-1)^5)(y^{31} - 8y^{30} + \cdots + 12y - 1)$
c_2	$((y-1)^5)(y^{31} + 36y^{30} + \cdots + 48y - 1)$
c_3, c_7	$y^5(y^{31} + 33y^{30} + \cdots - 10752y - 1024)$
c_5	$(y^5 - y^4 + 8y^3 - 3y^2 + 3y - 1)(y^{31} + 4y^{30} + \cdots + 174y - 25)$
c_6, c_9, c_{10}	$(y^5 - 5y^4 + 8y^3 - 3y^2 - y - 1)(y^{31} - 28y^{30} + \cdots + 2y - 1)$
c_8	$(y^5 + 3y^4 + 4y^3 + y^2 - y - 1)(y^{31} - 36y^{30} + \cdots + 2y - 1)$
c_{11}	$(y^5 + 3y^4 + 4y^3 + y^2 - y - 1)(y^{31} + 32y^{29} + \cdots + 1054y - 49)$