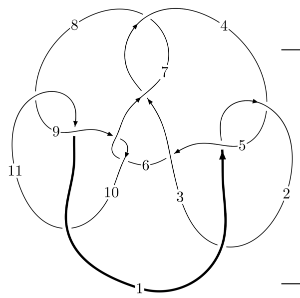
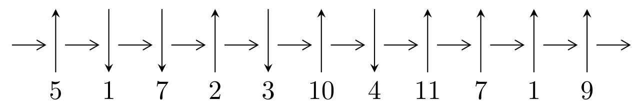
$11n_6$ $(K11n_6)$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

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

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

$$\begin{aligned}
I_1^u &= \langle -4445u^{18} + 25166u^{17} + \cdots + 157228b - 130422, \\
&\quad\; 102053u^{18} - 516382u^{17} + \cdots + 157228a + 1635396,\ u^{19} - 5u^{18} + \cdots + 18u - 1 \rangle \\
I_2^u &= \langle 3a^2u + a^2 - 4au + 7b + a + u - 9,\ a^3 + a^2u - a^2 + 3au + 2a - 5u - 5,\ u^2 + u + 1 \rangle \\
I_3^u &= \langle b - 1,\ u^4 - u^3 + 2u^2 + a - u + 1,\ u^5 - u^4 + 2u^3 - u^2 + u - 1 \rangle
\end{aligned}$$

* 3 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 30 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.
$\boldsymbol{I_1^u = \langle -4445u^{18}+2.52\times 10^4u^{17}+\cdots+1.57\times 10^5b-1.30\times 10^5,\ 1.02\times 10^5u^{18}-5.16\times 10^5u^{17}+\cdots+1.57\times 10^5a+1.64\times 10^6,\ u^{19}-5u^{18}+\cdots+18u-1\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_5 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}1\\-u^2\end{pmatrix}$$
$$a_3 = \begin{pmatrix}u^2+1\\-u^2\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-u^5-2u^3-u\\u^5+u^3+u\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}-0.649077u^{18}+3.28429u^{17}+\cdots+38.5711u-10.4014\\0.0282710u^{18}-0.160061u^{17}+\cdots-2.36210u+0.829509\end{pmatrix}$$
$$a_7 = \begin{pmatrix}0.638684u^{18}-2.98006u^{17}+\cdots-23.7743u+5.48846\\-0.213359u^{18}+1.10318u^{17}+\cdots+6.00785u-0.638684\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-u\\u^3+u\end{pmatrix}$$
$$a_8 = \begin{pmatrix}0.586798u^{18}-2.76808u^{17}+\cdots-23.8489u+5.47099\\-0.195678u^{18}+0.900151u^{17}+\cdots+5.28026u-0.573772\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-0.987191u^{18}+4.82270u^{17}+\cdots+47.6110u-13.0026\\0.180432u^{18}-0.834985u^{17}+\cdots-5.84697u+1.16762\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-0.620805u^{18}+3.12423u^{17}+\cdots+36.2090u-9.57192\\0.0282710u^{18}-0.160061u^{17}+\cdots-2.36210u+0.829509\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-0.620805u^{18}+3.12423u^{17}+\cdots+36.2090u-9.57192\\0.0282710u^{18}-0.160061u^{17}+\cdots-2.36210u+0.829509\end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= \frac{48467}{78614}u^{18} - \frac{220275}{78614}u^{17} + \cdots - \frac{2697747}{78614}u + \frac{420630}{39307}$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_4	$u^{19} + 5u^{18} + \cdots + 18u + 1$
c_2	$u^{19} + 15u^{18} + \cdots + 208u - 1$
c_3, c_7	$u^{19} + 2u^{18} + \cdots + 96u - 64$
c_5	$u^{19} - 5u^{18} + \cdots + 854u + 49$
c_6, c_9	$u^{19} + 3u^{18} + \cdots - 88u^2 - 32$
c_8, c_{11}	$u^{19} + 8u^{18} + \cdots - 15u - 1$
c_{10}	$u^{19} + 2u^{18} + \cdots + 69u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_4	$y^{19} + 15y^{18} + \cdots + 208y - 1$
c_2	$y^{19} - 17y^{18} + \cdots + 45036y - 1$
c_3, c_7	$y^{19} - 40y^{18} + \cdots + 17408y - 4096$
c_5	$y^{19} - 49y^{18} + \cdots + 501760y - 2401$
c_6, c_9	$y^{19} + 39y^{18} + \cdots - 5632y - 1024$
c_8, c_{11}	$y^{19} + 2y^{18} + \cdots + 69y - 1$
c_{10}	$y^{19} + 54y^{18} + \cdots - 2699y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.459827 + 0.896977I$ $a = 2.21570 + 0.93164I$ $b = 0.888580 + 0.149996I$	$1.34528 - 1.87445I$	$29.9213 + 13.6703I$
$u = -0.459827 - 0.896977I$ $a = 2.21570 - 0.93164I$ $b = 0.888580 - 0.149996I$	$1.34528 + 1.87445I$	$29.9213 - 13.6703I$
$u = -0.351109 + 0.745933I$ $a = 0.875169 - 0.043573I$ $b = 0.0093474 + 0.0139592I$	$-0.22305 - 1.43330I$	$-1.61645 + 4.92513I$
$u = -0.351109 - 0.745933I$ $a = 0.875169 + 0.043573I$ $b = 0.0093474 - 0.0139592I$	$-0.22305 + 1.43330I$	$-1.61645 - 4.92513I$
$u = 0.389305 + 1.111150I$ $a = -0.862837 - 0.197630I$ $b = 0.668732 + 0.907469I$	$-4.23087 + 5.58158I$	$-3.54918 - 7.60584I$
$u = 0.389305 - 1.111150I$ $a = -0.862837 + 0.197630I$ $b = 0.668732 - 0.907469I$	$-4.23087 - 5.58158I$	$-3.54918 + 7.60584I$
$u = -0.265172 + 1.190510I$ $a = 0.759357 + 0.604707I$ $b = -0.460697 + 0.797639I$	$-1.40496 - 0.89543I$	$-0.827466 + 0.267848I$
$u = -0.265172 - 1.190510I$ $a = 0.759357 - 0.604707I$ $b = -0.460697 - 0.797639I$	$-1.40496 + 0.89543I$	$-0.827466 - 0.267848I$
$u = 1.236570 + 0.125353I$ $a = -0.08471 + 3.83451I$ $b = 0.07758 - 3.21706I$	$-14.6816 - 4.7277I$	$1.60029 + 1.79597I$
$u = 1.236570 - 0.125353I$ $a = -0.08471 - 3.83451I$ $b = 0.07758 + 3.21706I$	$-14.6816 + 4.7277I$	$1.60029 - 1.79597I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.578208 + 0.363922I$ $a = 1.06872 + 1.66313I$ $b = -0.039673 - 0.833778I$	$-2.02190 - 1.85032I$	$0.40467 + 3.82422I$
$u = 0.578208 - 0.363922I$ $a = 1.06872 - 1.66313I$ $b = -0.039673 + 0.833778I$	$-2.02190 + 1.85032I$	$0.40467 - 3.82422I$
$u = 0.12128 + 1.49762I$ $a = 1.41899 + 0.08782I$ $b = -2.23717 - 0.89116I$	$-8.30737 + 0.41800I$	$-1.92088 - 0.17258I$
$u = 0.12128 - 1.49762I$ $a = 1.41899 - 0.08782I$ $b = -2.23717 + 0.89116I$	$-8.30737 - 0.41800I$	$-1.92088 + 0.17258I$
$u = 0.66518 + 1.37702I$ $a = -2.46188 - 1.46194I$ $b = 0.83728 + 3.06795I$	$-18.5579 + 11.4070I$	$0.02962 - 4.80086I$
$u = 0.66518 - 1.37702I$ $a = -2.46188 + 1.46194I$ $b = 0.83728 - 3.06795I$	$-18.5579 - 11.4070I$	$0.02962 + 4.80086I$
$u = 0.55124 + 1.54379I$ $a = 2.12819 + 1.66552I$ $b = -1.08511 - 3.58320I$	$19.5193 + 1.7269I$	$-0.878629 - 0.706920I$
$u = 0.55124 - 1.54379I$ $a = 2.12819 - 1.66552I$ $b = -1.08511 + 3.58320I$	$19.5193 - 1.7269I$	$-0.878629 + 0.706920I$
$u = 0.0686432$ $a = -8.11341$ $b = 0.682273$	1.19847	8.67340

II.
$$\boldsymbol{I_2^u = \langle 3a^2u+a^2-4au+7b+a+u-9,\ a^3+a^2u-a^2+3au+2a-5u-5,\ u^2+u+1\rangle}$$

(i) Arc colorings

$$a_1 = \begin{pmatrix}1\\0\end{pmatrix}$$
$$a_5 = \begin{pmatrix}0\\u\end{pmatrix}$$
$$a_2 = \begin{pmatrix}1\\u+1\end{pmatrix}$$
$$a_3 = \begin{pmatrix}-u\\u+1\end{pmatrix}$$
$$a_6 = \begin{pmatrix}-1\\0\end{pmatrix}$$
$$a_{10} = \begin{pmatrix}a\\-\frac{3}{7}a^2u+\frac{4}{7}au+\cdots-\frac{1}{7}a+\frac{9}{7}\end{pmatrix}$$
$$a_7 = \begin{pmatrix}-\frac{1}{7}a^2u-\frac{1}{7}au+\cdots+\frac{2}{7}a+\frac{3}{7}\\-\frac{4}{7}a^2u+\frac{3}{7}au+\cdots+\frac{1}{7}a+\frac{5}{7}\end{pmatrix}$$
$$a_4 = \begin{pmatrix}-u\\u+1\end{pmatrix}$$
$$a_8 = \begin{pmatrix}-\frac{1}{7}a^2u-\frac{1}{7}au+\cdots+\frac{2}{7}a+\frac{3}{7}\\-\frac{4}{7}a^2u+\frac{3}{7}au+\cdots+\frac{1}{7}a+\frac{5}{7}\end{pmatrix}$$
$$a_9 = \begin{pmatrix}-\frac{3}{7}a^2u-\frac{3}{7}au+\cdots-\frac{1}{7}a+\frac{16}{7}\\-\frac{1}{7}a^2u-\frac{1}{7}au+\cdots+\frac{2}{7}a+\frac{3}{7}\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-\frac{3}{7}a^2u+\frac{4}{7}au+\cdots+\frac{6}{7}a+\frac{9}{7}\\-\frac{3}{7}a^2u+\frac{4}{7}au+\cdots-\frac{1}{7}a+\frac{9}{7}\end{pmatrix}$$
$$a_{11} = \begin{pmatrix}-\frac{3}{7}a^2u+\frac{4}{7}au+\cdots+\frac{6}{7}a+\frac{9}{7}\\-\frac{3}{7}a^2u+\frac{4}{7}au+\cdots-\frac{1}{7}a+\frac{9}{7}\end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= \frac{17}{7}a^2u+\frac{29}{7}a^2-\frac{4}{7}au-\frac{6}{7}a+\frac{99}{7}u+\frac{12}{7}$

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.500000 + 0.866025I$ $a = 1.46996 - 0.49350I$ $b = 0.569840$	$1.11345 - 2.02988I$	$2.22484 + 11.58609I$
$u = -0.500000 + 0.866025I$ $a = -1.11700 + 1.21217I$ $b = 0.215080 - 1.307140I$	$-3.02413 - 4.85801I$	$0.92725 + 3.71146I$
$u = -0.500000 + 0.866025I$ $a = 1.14704 - 1.58470I$ $b = 0.215080 + 1.307140I$	$-3.02413 + 0.79824I$	$-2.65209 - 0.57512I$
$u = -0.500000 - 0.866025I$ $a = 1.46996 + 0.49350I$ $b = 0.569840$	$1.11345 + 2.02988I$	$2.22484 - 11.58609I$
$u = -0.500000 - 0.866025I$ $a = -1.11700 - 1.21217I$ $b = 0.215080 + 1.307140I$	$-3.02413 + 4.85801I$	$0.92725 - 3.71146I$
$u = -0.500000 - 0.866025I$ $a = 1.14704 + 1.58470I$ $b = 0.215080 - 1.307140I$	$-3.02413 - 0.79824I$	$-2.65209 + 0.57512I$

III. $\boldsymbol{I_3^u = \langle b-1,\ u^4 - u^3 + 2u^2 + a - u + 1,\ u^5 - u^4 + 2u^3 - u^2 + u - 1\rangle}$

(i) Arc colorings

$$a_1 = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

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

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

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

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

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

$$a_7 = \begin{pmatrix} -u^4 - u^2 - 1 \\ u^4 - u^3 + u^2 + 1 \end{pmatrix}$$

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

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

$$a_9 = \begin{pmatrix} -u^4 + u^3 - 2u^2 + u - 1 \\ 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u^4 + u^3 - 2u^2 + u \\ 1 \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} -u^4 + u^3 - 2u^2 + u \\ 1 \end{pmatrix}$$

(ii) Obstruction class $= 1$

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

(iv) u-Polynomials at the component

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

(v) Riley Polynomials at the component

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

(vi) Complex Volumes and Cusp Shapes

Solutions to I_3^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = -0.339110 + 0.822375I$ $a = 0.428550 + 1.039280I$ $b = 1.00000$	$1.31583 - 1.53058I$	$8.47842 - 1.00973I$
$u = -0.339110 - 0.822375I$ $a = 0.428550 - 1.039280I$ $b = 1.00000$	$1.31583 + 1.53058I$	$8.47842 + 1.00973I$
$u = 0.766826$ $a = -1.30408$ $b = 1.00000$	-0.756147	1.86520
$u = 0.455697 + 1.200150I$ $a = -0.276511 + 0.728237I$ $b = 1.00000$	$-4.22763 + 4.40083I$	$-2.41100 - 1.19010I$
$u = 0.455697 - 1.200150I$ $a = -0.276511 - 0.728237I$ $b = 1.00000$	$-4.22763 - 4.40083I$	$-2.41100 + 1.19010I$

IV. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1	$((u^2+u+1)^3)(u^5-u^4+\cdots+u-1)(u^{19}+5u^{18}+\cdots+18u+1)$
c_2	$(u^2+u+1)^3(u^5+3u^4+4u^3+u^2-u-1)$ $\cdot(u^{19}+15u^{18}+\cdots+208u-1)$
c_3	$u^6(u^5+u^4+\cdots+u-1)(u^{19}+2u^{18}+\cdots+96u-64)$
c_4	$((u^2-u+1)^3)(u^5+u^4+\cdots+u+1)(u^{19}+5u^{18}+\cdots+18u+1)$
c_5	$((u^2+u+1)^3)(u^5-u^4+\cdots+u+1)(u^{19}-5u^{18}+\cdots+854u+49)$
c_6	$u^5(u^3+u^2+2u+1)^2(u^{19}+3u^{18}+\cdots-88u^2-32)$
c_7	$u^6(u^5-u^4+\cdots+u+1)(u^{19}+2u^{18}+\cdots+96u-64)$
c_8	$((u+1)^5)(u^3-u^2+1)^2(u^{19}+8u^{18}+\cdots-15u-1)$
c_9	$u^5(u^3-u^2+2u-1)^2(u^{19}+3u^{18}+\cdots-88u^2-32)$
c_{10}	$((u+1)^5)(u^3+u^2+2u+1)^2(u^{19}+2u^{18}+\cdots+69u-1)$
c_{11}	$((u-1)^5)(u^3+u^2-1)^2(u^{19}+8u^{18}+\cdots-15u-1)$

V. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_4	$(y^2+y+1)^3(y^5+3y^4+4y^3+y^2-y-1)$ $\cdot(y^{19}+15y^{18}+\cdots+208y-1)$
c_2	$(y^2+y+1)^3(y^5-y^4+8y^3-3y^2+3y-1)$ $\cdot(y^{19}-17y^{18}+\cdots+45036y-1)$
c_3, c_7	$y^6(y^5-5y^4+\cdots-y-1)(y^{19}-40y^{18}+\cdots+17408y-4096)$
c_5	$(y^2+y+1)^3(y^5-5y^4+8y^3-3y^2-y-1)$ $\cdot(y^{19}-49y^{18}+\cdots+501760y-2401)$
c_6, c_9	$y^5(y^3+3y^2+2y-1)^2(y^{19}+39y^{18}+\cdots-5632y-1024)$
c_8, c_{11}	$((y-1)^5)(y^3-y^2+2y-1)^2(y^{19}+2y^{18}+\cdots+69y-1)$
c_{10}	$((y-1)^5)(y^3+3y^2+2y-1)^2(y^{19}+54y^{18}+\cdots-2699y-1)$